News of the Industry Begins Page 236

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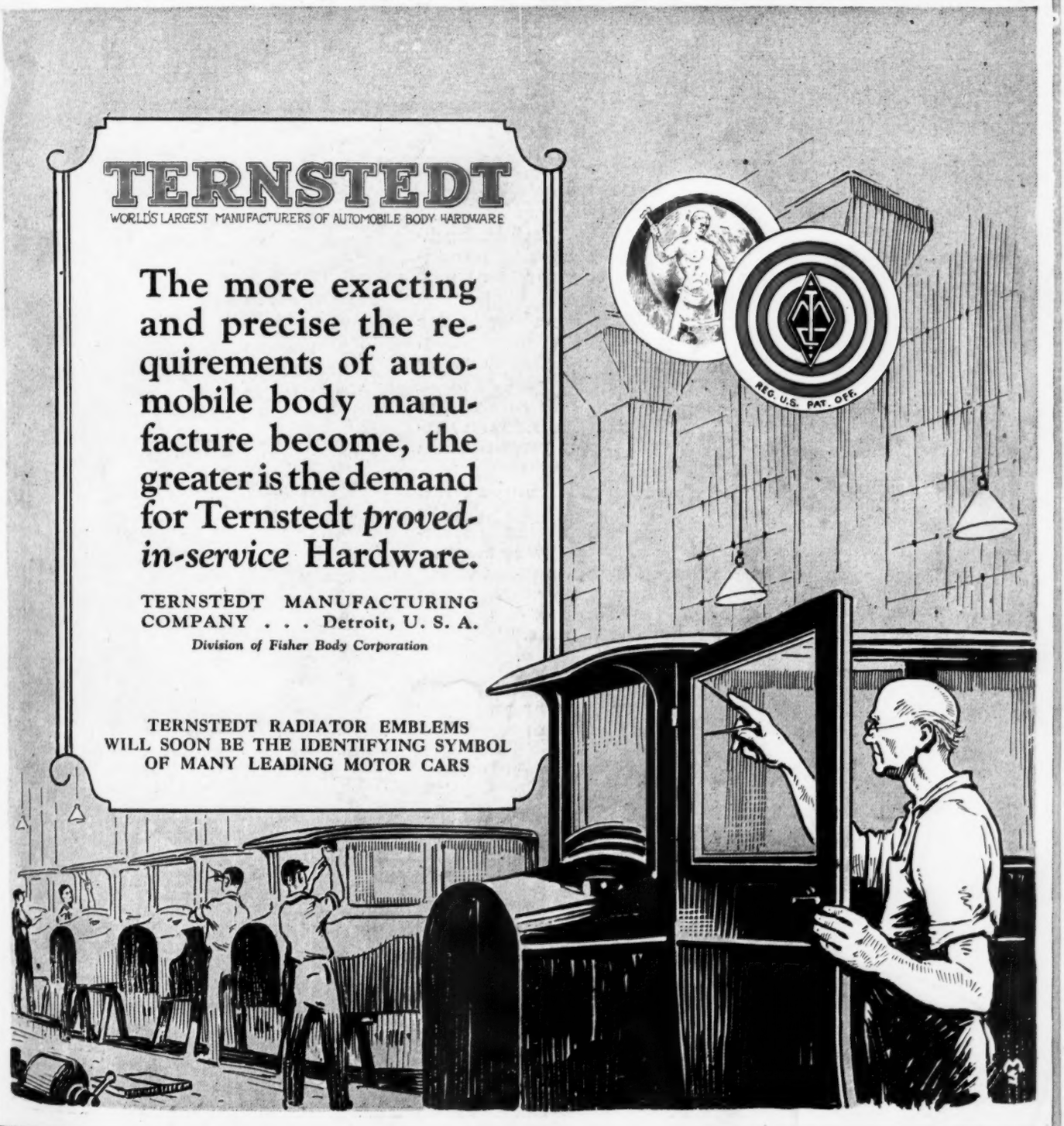

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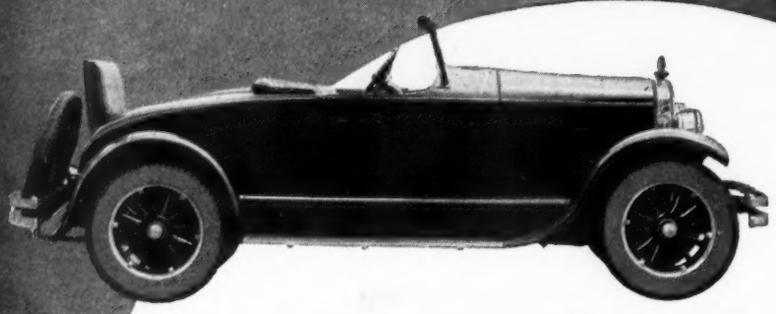

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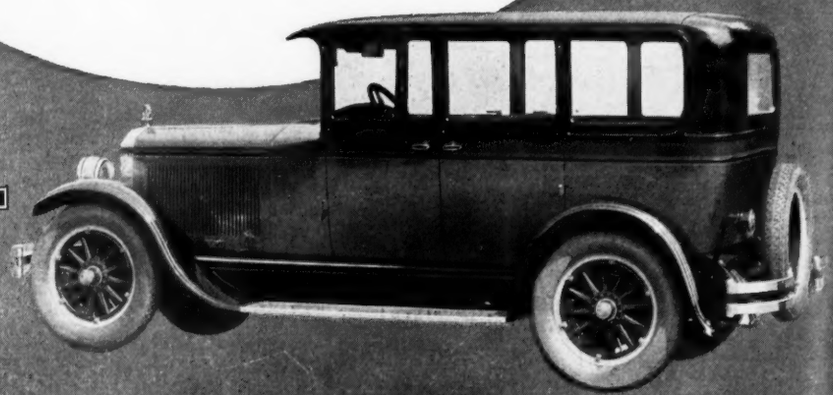


AUTOMOTIVE INDUSTRIES

VOLUME 54 *Philadelphia, Thursday, February 11, 1926* NUMBER 6

Industry Showing Ability to Avoid Early 1926 Danger Points

Several already left behind and impression grows that sound conditions will continue through whole of the year. Used cars and finance methods give most worry now.

By Norman G. Shidle

SEVERAL of the danger points which stood before the industry at the opening of the New Year already have been passed safely.

The danger of over-emphasis on prices and consequent ill effects on the merchandising value of the national shows did not materialize. Price revisions were made, but were of such a character and were handled in such a way as to have little, if any, effect on show selling.

The danger of increased costs through higher tire prices has been completely dissipated for the time being at least.

Dealer stocks of new cars have not become unwieldy despite a new January production record.

A growing feeling seems to be arising among both dealers and factory executives that good business can continue on a sound and conservative basis throughout 1926. Far less tendency exists to discount the last six months of the year than did exist a month ago.

This passing of some important danger points is one of the chief developments to be recorded as a result of the two national shows, the trade gatherings which accompanied them and the telegraphic reports on current automotive conditions which have just been received from *Automotive Industries* correspondents in all parts of the country.

Business Unusually Good

Business is unusually good for this time of year. That is the story told by actual sales at the New York and Chicago exhibits and by actual sales and attendance at the local shows, such as Philadelphia, Baltimore, Cleveland and Milwaukee, which already have been held. The same story is told by the record breaking attendance at the annual meeting of the Society of Automotive Engineers two weeks ago and by the dealers gathered at the various dinners and meetings held in connection with the national shows.

The idea that these sound conditions will be maintained, not only for the first six months, but throughout 1926, seems to be growing stronger in the minds of executives both in the vehicle and parts fields. While business trends rest fundamentally, of course, on economic factors, the influence of mental attitude among business men has come to be recognized as a distinct contributing influence to good or bad times. Consequently, the prediction about a good first half for 1926 and a mysterious wave of the hand as regards the last six months is becoming less common. Executives generally are planning to go forward conservatively and continuously throughout the year.

Survey of Current Conditions

Since the ending of the national shows this year happened to coincide with the time of our regular monthly survey of business conditions, an unusually good chance occurs to check the impressions gained from the events of the show weeks with conditions as shown by field surveys. They check remarkably well.

Both indicate clearly for example that used cars constitute the one big problem immediately facing the dealers and the manufacturers and that many more paragraphs still are going to be written before the last word is said as regards retail financing methods.

With new car sales continuing at an exceptionally good rate for the month of January, almost universal difficulty in moving used vehicles is reported. The field reports are borne out by informal talks with dealers at Chicago last week, nearly all of whom seemed more or less worried about this phase of their business. The seriousness of the used car situation is emphasized by the fact that even those dealers who have been successful in getting rid of a reasonable number of their used vehicles have done so, in most cases, at a considerable loss. Drastic slashing of used car prices has taken place in several cities.

The educational work along used car lines being carried on by the National Automobile Dealers Association as well as the special attention being given to used car prob-

lems by a number of manufacturers eventually will go a long ways toward alleviating the worst phases of this trying problem. But only very careful handling of the situation at present can prevent a number of dealers from getting into difficulties within the next few months, particularly in view of the fact that the used cars are hard to sell just at the time when factories are asking dealers to stock a maximum number of new cars in anticipation of spring demand.

Used Car Terms More Liberal

And closely tied up with the used car situation are the latest developments in connection with retail financing in the passenger car field. The difficulty of moving used cars on a 40 per cent down and 12 months-to-pay basis in the face of the extremely liberal terms being offered in financing new cars was discussed in some detail in our issue of January 21 under the title, "Extra Effort Will be Required to Keep Used Cars Moving This Year." As might be expected under the circumstances, terms on used cars gradually are becoming more liberal, however, with the result that the whole fabric of retail financing tends to become less closely knit.

Moreover, the relation of installment terms already extended to dealer car stock is not always clearly recognized. This point is made in an interesting paragraph contained in a recent bulletin issued by Hare & Chase which reads:

"The recent percentage increase in time sales must be reckoned with in deciding whether or not our stocks of automotive merchandise today are in a liquid condition. To discover how the industry stands today as compared with its condition in 1920 we must add to its visible stock of vehicles on hand a proportion of the number now outstanding and in process of payment equal to the difference in the respective percentages of time sales today and in 1920, allowing, of course, for the average amount unpaid on each."

That the dealers as well as the manufacturers are giving serious attention to financing methods and their probable effect on future profits is evidenced by the definite stand taken on financing questions at the National Automobile Dealers Association meeting in Chicago last week. This association passed resolutions recommending elimination of all dealer endorsement on customer paper, including in its disapproval repurchase agreements as well as straight recourse plans. Also the resolutions condemned "the practice of automobile manufacturers who are paying subsidies to finance companies" and recommended that the practice be discontinued immediately; also the resolutions stated, "the dealer should have complete freedom of choice in his selection of the finance company with which he is to do business." These were only a few of the recommendations contained in the set of ten resolutions which were adopted.

Financing Still Major Problem

It is not necessary to agree altogether or in part with the recomendations of the N. A. D. A. to sense the vast significance of so specific an interest in and so specific an action regarding the retail financing situation on the part of this body. Whether or not manufacturers finally agree with their dealers about the best method of handling installment sales, it is perfectly evident that further thought and study is going to be necessary before a condition of stability is achieved in this regard. Retail financing bids fair to continue one of the two or three major problems before the manufacturers in 1926.

But in the face of these few serious questions which confront the industry, appear an unusual number of favorable factors as February goes on. To begin with the relative purchasing power of the farmer appears to be better than it has been for some time. In an official statement this week the Department of Agriculture asserts that the farmers generally are in a better position today than at any time since 1920. It is perfectly possible that the next year or two may be better for the agriculturist than for the industrial workers, relatively speaking. Coupling this situation with the fact that agriculture is the source of 50 per cent or more of the primary income in 31 of our 48 states, the outlook for automotive sales takes on a rather favorable aspect.

January car and truck production this year set a new high mark exceeding that of 1925 by nearly 93,000 and that of January, 1924, by nearly 10,000. No evidence of serious overstocking yet appears, even in the face of this new production record, and territorial reports in general indicate that sales also reached an unusually high point in January. Fear of overstocking does exist among dealers in certain sections, notably on the Pacific Coast, but thus far no general difficulties of this kind have developed.

Accessory sales in recent weeks have been exceptionally good for this time of year, the only low points being in those sections where bad weather has interfered seriously with winter driving.

Prices Apparently Stabilized

Prices apparently have been stabilized for the time being without anything in the nature of a price war having developed. A number of changes were made during the New York show, of course, but they were not emphasized in such a way as to impede buying at the show. No further revisions were announced in Chicago. As a matter of fact, very little was said about prices one way or the other in the dealer gatherings which were held during the national shows. Considerable time was given over, however, to showing dealers how to use effectively the quality appeal in merchandising 1926 lines.

Drastic decline in rubber prices and consequent reduction in tire prices by some manufacturers have relieved the cost pressure on this score just at a time when such relief was most welcome to the car builders.

Thus it appears that certain of the serious dangers which faced the industry at the beginning of the new year already have been passed without harmful results. Strong favorable factors exist to help the industry meet successfully those few which still remain.

Detailed reports from different sections of the country show a generally strong condition, except for the used car situation as previously noted. Following are summaries of the most important information developed by this month's survey:

BOSTON

Boston distributors and outside dealers are gratified with the volume of business done in January and early February in the sale of new cars. Good weather conditions have encouraged buying. Used cars have not been moving very fast, but dealers are not yet seriously worried over them because the lack of customers has allowed them more time to recondition the trade-ins.

There are no very serious troubles in textile or other lines, and prospects for spring orders look brighter than ever.

NEW YORK

With optimism prevailing generally throughout the metropolitan territory, business finds no unfavorable trends for the first month of the new year.

In automobile sales, 1926 started off "in high." January, 1926, car sales were considerably larger than those of January last year. Stocks on hand are not large. The used car market is not causing any abnormal amount of difficulty.

BUFFALO

Reports indicate new car sales in January were somewhat higher than in January, 1925. Tire sales are reported as normal, while the used car situation has undergone no special change. Automotive manufacturers are, almost without exception, busier than they were a year ago. Wholesale automotive equipment dealers report business about on a par with that of a year ago.

Reports on new car sales for January indicate increases up to 40 per cent over January, 1925.

PHILADELPHIA

Business, in both new cars and automotive equipment, is reported as extraordinarily large at this time. The 25th annual automobile show resulted in many orders being taken on the floor, and trade has been stimulated ever since.

The used car situation has eased up considerably, and queries tend to show that constant plugging and liberal newspaper advertising have finally succeeded in reducing big stocks of second-hand cars, only recently burdening the merchants.

Accessory dealers also reported good business in January.

PITTSBURGH

Automobile sales all along the line were lower in Pittsburgh and Western Pennsylvania districts in January as compared with December. The explanation may be found partly in the unusually cold weather that prevailed in the first month of the year, resulting in selling interests being forced to accept a slow start in January and partly in slowing-up due to the holiday period.

Chains were the best line among the accessories.

The tire situation is unchanged. Purchases are being made only when necessity demands.

BALTIMORE

January showed some increase in business in this section. Public interest has reached the highest point ever attained, helped by the show, and as a result, dealers anticipate excellent spring business.

Improvement in the used car situation was reported during the month.

ATLANTA

New car and motor truck sales in the Atlanta territory in January continued on an unusually brisk basis. Business has been especially good in the last month in the smaller towns and in industrial communities, due to the general prosperity prevailing among the farmers.

Accessories and parts business were also on a very active basis, Atlanta jobbers state. Parts demand continued unusually active. Equipment sales to service stations promise to be very active this year because of the large amount of new service station and garage construction in progress in various parts of the southeast.

CHICAGO

Automotive trade conditions in the Chicago territory are possibly a little better than at this time last year. The first part of January held up well, and the week following the New York show was one of great activity. The last two weeks of the month, however, were spent largely in efforts to move the stock of used cars, which has enlarged greatly during and since the holidays.

Tires were at a standstill, with comparatively few sales reported.

Replacement parts and accessories moved better than in January of last year, but were about on a level with new car sales. Used car terms are low and many repossessions are reported.

CLEVELAND

Cleveland dealers and distributors sold more new cars last month than during any previous January on record.

Accessory and parts sales and manufacture were equally good. Prospects for continuance of good trade in all lines are excellent.

MILWAUKEE

Record sales were made at the Milwaukee automobile show in mid-January, and these succeeded in firing distributor, dealer and public alike with new enthusiasm over the motor car prospects there for the next 12 months. Sales made on the floor of the show and during the two weeks between the show and the end of January ran close to 800 cars.

Accessories received a great deal of attention at the local show and many sales were made.

Used car sales were fair to poor, depending upon what the dealer had to offer, closed cars having a monopoly on the used car sales, with only an occasional sport roadster sold. There is such an abundance of used car stocks in the city that price cutting has been resorted to by dealers to move their stocks, and many are taking considerably less than the allowed price of cars in order to clear their floors.

ST. LOUIS

Sales of automobiles in this territory slowed up considerably in January, due to the proximity of the annual automobile show, the necessity for paying debts contracted during the Christmas period, and bad weather. However, last month really was no worse than Januarys of the past.

Used car sales were practically at a standstill in January, owing also to inclement weather, and it is not expected that a great deal of improvement will be shown until March. Collections were good and refusals few.

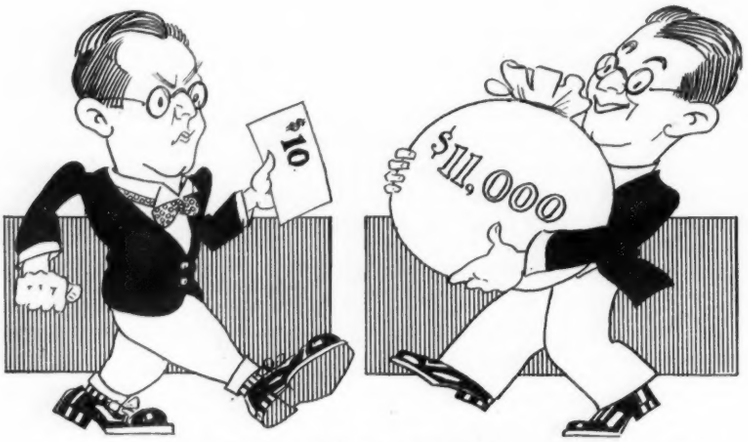
DES MOINES

New car sales generally are slow. Price reductions have helped to raise the volume in certain lines.

Accessory sales are fair, while supply and shop equipment sales are good.

(Continued on page 245)

Hudson Assets Multiply 430



An original investment of $10 in the Hudson Motor Car Co. is now worth $11,000. Add to this the amount earned in cash dividends and the original $10 investment would have increased to $12,300 up to the present time.

Vast business built up almost entirely from earnings. One of best money-makers in the industry. $10 returns $12,300

By A. Motelle

THAT the price of a stock over a long period is fixed by fundamental value-determining factors—pools, etc., being only incidents in the movement—is illustrated by the history of the rise in price of Hudson Motor Car Company stock.

Hudson motor stock sold as low as $20 in 1923 and slightly below that price in 1922. In 1924 it sold as low as $20.50 and did not go above $36. It is selling now at around $110. Why such a rapid appreciation?

Students of the company's business have been struck by the fact that even in 1924, when production in the industry as a whole declined 11 per cent from the previous year, Hudson showed an increase in sales of 45 per cent in number of cars and a 14 per cent increase in gross profits from sales, and both were the largest in the company's history to that date.

Conservative bookkeeping, liberal depreciation policies, a high degree of liquidity and quick turnover of assets are features of Hudson management. For instance, in 1924 the total book assets were at the rate of $256 per car produced, while net tangible assets per car amounted to slightly over $200, of which $85, roughly, was plant and $115 net working capital.

Above all other factors in the company's success, however, has been its closed car production policy. It sensed the trend of the industry better perhaps than any other important producer and specialized in closed car models before the movement in this direction became general.

In 1919 closed car production was only 10.3 per cent of the country's total. In 1924 the percentage rose to 43 per cent. Last year, 1925, it was 56 per cent, according to preliminary N. A. C. C. figures. Hudson has been turning out 98 per cent closed models recently, of which 90 per cent have been coaches, Hudson and Essex. Thus the company "got in on the ground floor" of the closed car demand and its commercial success is based principally on this fact, but into this success naturally, are also woven efficient manufacturing practices and able merchandising methods.

The company has grown into one of the leaders in the industry in point of output and earning power. The original investment was $100,000 and this, after large dividends, had grown to $43,402,000 in November, 1925, of which net working capital alone was in excess of $25,000,000.

On February 24, 1909, when the company was organized, there were 10,000 shares outstanding of $10 par value. Of this sum, $73,990 was issued for cash, $525,000 for property and $1,010 as a stock dividend. In September 16, 1910, an additional 90,000 shares of $10 par value stock were issued by capitalization of $900,000 of accumulated profits or surplus. In August, 1913, an additional increase of $1,001,000 of capital stock of the same par value was made by further capitalizing $895,000 of surplus and selling $106,000 of the stock for cash. In April, 1922, the capitalization was further increased, when 200,000 shares were issued in exchange for the entire capital stock of Essex Motors,

AUTOMOTIVE stocks stand in a new light before the investing public today. Not long ago these stocks were considered in the main as speculative and valued on the same basis as other speculative securities. But the public's attitude has changed and motor stocks now rank in investment value with rails, steel, utilities and the older industrials.

Why this should be will become apparent to anyone who follows the series of articles in *Automotive Industries* dealing with the financial growth and economy of some of the leading car producing companies.

The accompanying article is the third of the series. The first, treating of the Studebaker Corp., was printed in the December 10, 1925, issue. The second dealt with the Hupp Motor Car Corp. and appeared January 21. Others are still to come. Watch for them in *Automotive Industries*.

Times in Seventeen Years

and 910,000 shares were issued in exchange for 182,000 $10 par value shares.

In this way the par value shares were changed into no par, on the basis of 5 new no par shares for one old ($10 par). This was accompanied by a transfer of $10,700,000 from the surplus account into the capital account. In April, 1924, a 10 per cent stock dividend was declared which involved an increase in the number of shares from 1,200,100 to 1,320,050 and $1,500,625 was again transferred from the surplus to capital account. In July, 1925, in line with the policy of giving its employes an active interest in the business, 10,000 shares of no par value were sold to J. H. Whittaker, factory manager, for a consideration specified as "cash and services." The number of shares was thus brought to the present amount outstanding, 1,330,050 no par value shares and 100 shares of $10 par value.

Small Issue to Employes

It is thus seen that the total capitalization from 1910 was built up from accumulated earnings except for a small issue sold to employes. Except for the 200,000 shares of no par value given in exchange for the Essex business the original investors have remained the full possessors of the business and whatever sales of stock took place did not involve new financing, the sales being of private nature whereby older holders disposed of part of their holdings to the public through the intermediary of bankers.

Allowing for the shares issued for the Essex business and for the small issue of shares to employes, the original investor has now approximately one hundred shares for every one share in 1909, or $11,000 for every $10 of original investment, an appreciation of 1100 times in 17 years.

But this is not the whole story; the company has paid large cash dividends as well. In 1910 it paid a 50 per cent cash dividend on the $10 par value shares and a $1010 stock dividend, as we have seen above, came out of the 1909 earnings. Later in 1910 the 900 per cent stock dividend was declared out of the preceding year's profits. Up to 1922 the cash dividend rate varied from 10 per cent to 75 per cent. The present dividend of $3 represents on the older capitalization of $10 par value stock $15, or 150 per cent.

A simple calculation shows that the total cash dividends to the end of 1925 amounted to $16,613,000, or, making approximate adjustments as above, another $1300 on each original share. Counting both capital appreciation and cash dividends the original $10 invested in one share has grown to $12,300.

The constant recapitalizations make it difficult to obtain a long and homogeneous series of income account and balance sheet figures. Moreover, the balance sheet and earnings prior to 1922 are available for the Hudson company proper, while later data give consolidated accounts of both Hudson and Essex.

Since 1917 the production of Hudson cars has shown a continuous expansion except in the 1918-1919 period when reduction of output was imposed in the first year by the War Industries Board, and from which it gradually recuperated. In the depression year of 1921 it was among the few companies that reported only a relatively small drop in earnings, although the number of cars sold decreased substantially, the same applying to the Essex cars.

Capital Growth of Hudson Motor Car Company

Feb. 24, 1909—Company stock outstanding: 10,000 shares of $10 par value stock, issued as follows: $73,990 for cash, $25,000 for property; $1,010 as stock dividend. CAPITAL $100,000 in shares of $10 par.

Sept. 16, 1910—Stock dividend of 900 per cent declared by issuing additional 90,000 shares of $10 par value stock and transferring $900,000 profits from surplus to capital account. CAPITAL $1,000,000 in shares of $10 par.

August 8, 1913—Capital stock increased $1,001,000 by converting $895,000 of surplus into $10 par value shares, and by selling $106,000 of stock (same par value) for cash. CAPITAL $2,001,000 in shares of $10 par.

April 29, 1922—200,000 shares of stock exchanged for stock of Essex Motors and 910,000 shares of no par value issued in exchange for 182,000 shares of $10 par value by transfer of $10,700,000 from surplus to capital account. No. of shares: 1,110,000 of no par value, 200,100 of $10 par value. CAPITALIZED at $13,201,100 (end of year data).

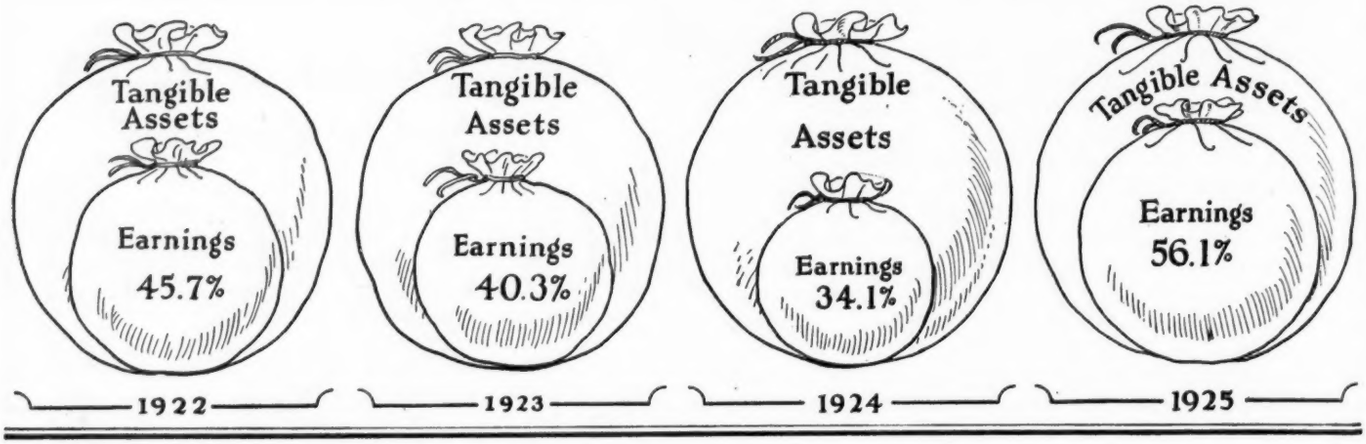
April, 1924—Ten per cent stock dividend declared, increasing number of shares from 1,200,100 to 1,320,050. Addition of $1,500,625 made to capital account from surplus. No. of shares: 1,320,050 of no par value, 100 of $10 par value. CAPITALIZED at $16,501,625 (end of year data).

July 29, 1925—10,000 shares of no par value of the authorized but unissued shares sold for a consideration to J. H. Whittaker, factory manager of the company, the consideration being cash and services. No. of shares: 1,330,050 of no par value, 100 of $10 par value. CAPITALIZED at $16,626,625 (end of year data). In addition the surplus stood at $26,375,360, making the total net book worth of the company $43,001,985, an increase of 430 times since 1909.

Allowing for the shares issued for the Essex business and for the small issue of shares to employees, the original investor has now approximately 100 shares for every one share in 1909, or $11,000 for every $10 of original investment, an appreciation of 1100 times in 17 years.

It should be noted that the capital since 1910 has been built up practically entirely from accumulated earnings.

Hudson Earnings on Tangible Assets After All Deductions but Before Federal Taxes—1922-25



The company's reports of its expense of selling, shipping, advertising, service, etc., show that such expense was just one-third of the gross income in 1924; in the two earlier years it was nearer to 30 per cent, but in 1921 it was as high as 42 per cent of the gross income and 45 per cent of the gross profit from sale of automobiles and parts.

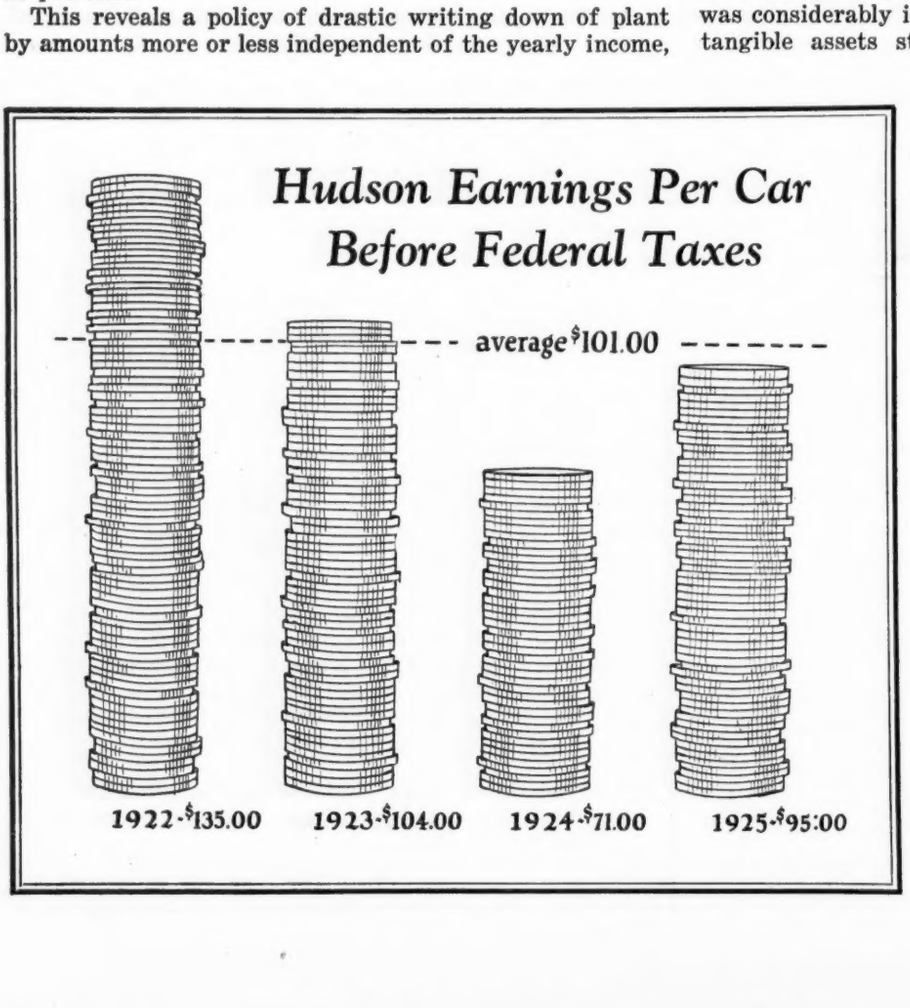
It also has a liberal depreciation policy and has been writing off each year large amounts of its fixed investment. In 1925 it wrote off plant depreciation at the rate of nearly 10 per cent; in 1924 it was over 10 per cent, and the annual average for the previous three years was about 13 per cent.

This reveals a policy of drastic writing down of plant by amounts more or less independent of the yearly income, as witnessed by the fact that in 1921 nearly 30 per cent of gross income was written off, while in recent years the write-off was around 10 per cent of gross income. This sound depreciation policy is based on the following depreciation standards: Building costs are depreciated at 3 per cent per annum, equipment 6.6 per cent, machinery 10 per cent, perishable tools 30 per cent, trucks and automobiles 36 per cent, while jigs, fixtures, dies patterns, etc., are charged into operating expenses at the rate of $7.50-$10 per car.

As already commented upon, the balance sheet is impressive because of its unusual degree of liquidity. In November, 1925, the net working capital of $25,234,000 was considerably in excess of the value of plant while net tangible assets stood at $43,402,000. Cash and cash equivalent were in excess of current liabilities by over $9,000,000. The plethora of both cash and cash equivalent, as well as of net working capital in relation to plant and gross book assets, viewed in the past experience of the company, suggests that the stockholders may expect considerably better returns than the present 3 per cent dividend. However, the company may choose to compensate the stockholders by stock dividends instead of cash disbursements, this in line with the past policy of the company and assuming it could use advantageously the accumulated surplus for further expansion of the business, which is likely.

The unusually high degree of turnover of plant as well as of working capital is seen in that the manufacturing gross profit in 1925 was 1.82 times the value of the plant and .74 times the value of the plant and net working capital combined.

The value of plant per car produced at the end of 1925 stood at $69; the value of net tangible assets at $167, and the value of gross book assets at $227.



The profitableness of the business is seen from the fact that in 1924 the earnings before Federal taxes after all deductions were 61 per cent on the working capital and if taken to the value of plant showed 86 per cent, and on tangible assets 34 per cent. In 1923, a much better year, the respective percentages were 75 per cent, 91 per cent and 41 per cent. In 1925 they showed a sensational rise to 97 per cent, 139 per cent and 56 per cent, respectively.

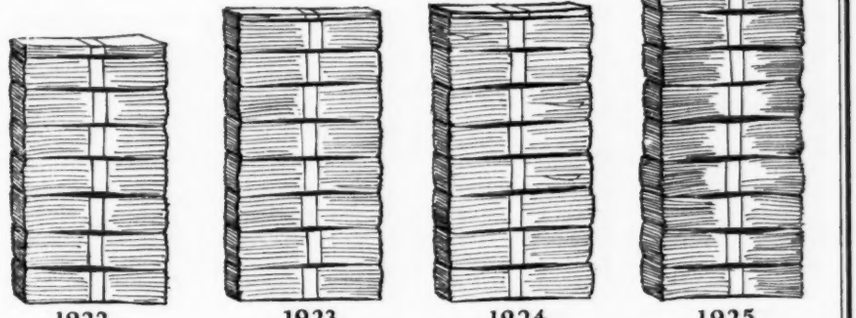
The other remarkable things revealed by the balance sheet are that in 1925 net earnings before Federal taxes were $8,000,000 in excess of receivables and inventories, that the ratio of such earnings to the inventory as of the end of the company's year was 22 (1.5 at the end of 1924) and to receivables 4.3 (3.5 in 1924) —high standards for the industry, especially the receivable ratio. All these are direct derivatives of the company's huge earnings power. On a per average car sold basis such earnings before Federal taxes were $104 in 1923. They declined to $71 in 1924 and improved to $95 in 1925.

It is these earnings that have made possible the spectacular building up of the business and resulted in net earnings in excess of $6 per share in the years 1921-1923, and even in 1921 left $4.61 per share for the stockholders. In 1925 the net earnings per share jumped to $16.07.

The capital structure of the company is the simplest possible. All told there are outstanding at present 1,330,150 shares of which only 100 are of $10 par value, the rest being of no par value. The book value per share works out, as of the November 30, 1925 accounts, at $32.60, of which $19 was net working capital and $13.60 plant, etc. The latter account showed an increase of some 75 per cent from last year, and is a natural result of the tremendous increase—nearly doubling—of the physical volume of business over 1924. Even with the 1925 expansion of plant it is a matter of surprise to find that such a huge volume of business was handled with such a relatively small value of plant. Plant, inventories and receivables together are also unusually small on a per car basis.

Hudson Net Income After All Deductions

Hudson Motor Car Company's net income has always been large, although, as shown here, earnings of previous years were dwarfed by the enormous 1925 figure of $21,378,000. The earnings for 1925 were more than 2½ times as large as in 1924.



1922	1923	1924	1925
$7,243,000	$8,004,000	$8,073,000	$21,378,000

The sensational success of this leading six cylinder car producer, as has already been pointed out, has been considerably in excess of the average of the industry. By increasing the output and passing on to the consumer part of the economies resulting from mass production, and by thus placing within the reach of the large mass of automobile buyers closed cars, the company has created an enormous market for its product among the millions of owners of low priced open cars.

There is nothing to indicate that this trend is to be arrested, although it seems almost certain that the margin of profit this year will not be as high as in 1925, because of the reduction in prices and higher cost of materials and equipment. Subject to the usual hazards of the industry, it is fair to assume that the earning power of the company will remain at a high level, however.

ACCORDING to the (French) Official Monitor of Commerce and Industry, on November 21 there was inaugurated at Strasbourg the National High School of Petroleum and Liquid Fuels, under the chairmanship of M. Daniel-Vincent, Minester of Commerce.

The school is divided into three sections, dealing, respectively, with geology, exploitation and chemistry. Both theoretical and practical instruction will be given in the subject of petroleum and all other liquid fuels. The essential object of the school is to train specialized technicians, geologists, engineers and chemists—the latter specializing not only in the field of liquid fuels but also in the field of coal and petroleum derivatives. Another, no less important object, is to instigate and develop studies and researches of a purely scientific or of a technical character in these three branches, between which a close cooperation is rendered possible by reason their natural relationship.

Being connected with the University of Strasbourg, the school has definitely taken the place of the Petroleum Institute, the scope of which has thus been materially widened.

IN Italy there are about 6,000 agricultural tractors in use at the present time. The Italian industry cannot produce more than 1,000 tractors per year and the demand being considerably greater, a part of it has to be met by import. Several measures have been adopted by the Italian Government which favor the substitution of mechanical tillage for horse tillage. What is needed in Italy is said to be a tractor adapted for plowing in very hilly territory. Such a tractor should be capable of working on grades up to 35 deg (70 per cent) and should weigh not more than 5,000 lb.

The Changing Channels of *Replacement Parts Distribution*

Gigantic growth of market has antiquated distributing methods in vogue ten years ago. Buying habits change. Manufacturers must adjust themselves to new conditions.

By Leon F. Banigan*
Editor Motor World Wholesale

TODAY the distribution of replacement parts is a serious problem in the life of every car manufacturer. How can replacement parts be most effectively and economically distributed?

Most of the difficulties in replacement parts distribution at the present time are due, it seems, to the fact that some are still trying to distribute parts through channels and methods that were in vogue ten years go. They have not caught the picture of the tremendous expansion of the replacement parts market and the changing channels of distribution to serve that market.

One of the strongest criticisms of present methods that I have heard is that they start at the factory and expect to make the customers conform to them instead of starting with the customer, giving due heed to his needs and buying preferences and conforming to them all the way up to the factory.

There are two major points to bear in mind in any discussion of this subject:

1. The tremendous growth of the replacement parts market in the last decade.
2. The effects of the growth of that market upon buying habits and distribution methods.

Let's get a mental picture of our market. And first of all let's recognize the fact that car and truck registration is the barometer of the replacement parts market.

While motor vehicles and sales have fluctuated up and down in ten years, maintenance and operation sales, which create the demand for parts, have gained steadily, even in years of depression. They follow the registration curve.

Studying the Registration Curve

Let's study the registration curve for the past ten years. In 1915 when the general automotive jobber became a factor in distribution there were 2,500,000 cars and trucks in the United States.

In 1925 there were 20,000,000.

In 1915 there were about 25,000 repair shops, and there were approximately 100 vehicles to each repair shop.

In 1925 there were 75,000 repair shops—and there were 266 vehicles to each shop.

Ten years ago motor vehicle sales amounted to 80 per cent of the automotive market.

Five years ago car and truck sales were only 60 to 65 per cent of the automotive market.

In 1925 motor vehicle sales had dropped to 44 per cent of the market and 56 per cent of the money spent in all automotive establishments was for replacement parts, maintenance and operation.

So much for the national picture of our tremendous growth in the replacement parts market.

Let's look at the picture sectionally.

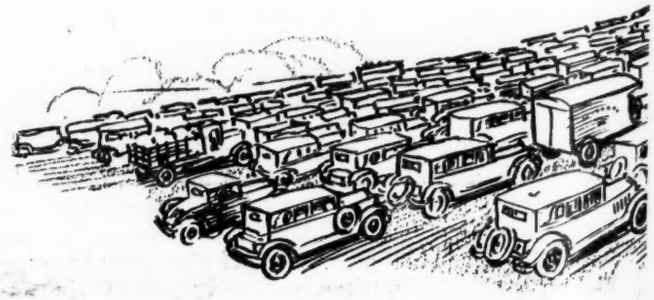
Amazing Growth in Ten Years

In 1915 there were 510,000 vehicles in the west north central states of Minnesota, Missouri, Iowa, Nebraska, Kansas and North and South Dakota. In 1925 in that great farm and rural section there were approximately 3,000,000 motor vehicles or half a million more than in the entire United States ten years ago. And remember, gentlemen, that this section while accumulating a half million more cars than the entire country had ten years ago, has faced business conditions that have been generally worse than any other part of the country during that period.

Take the Middle Atlantic States of New York, New Jersey and Pennsylvania. In 1915 they had 472,000 cars and trucks. Today they have over 3,500,000—a cool million more than the whole United States ten years ago.

Let's compare some of the other sections; they are all mighty interesting.

Realizing these conditions, is it any wonder that some of our wholesalers who are recognized as old line jobbers are drawing in their horns? With this tremendous growth in registration—the potential market for replacement parts and supplies—they are now able to cover as large a market in half a state or even a couple of counties



*A talk delivered at the Chicago Show Meeting of the Automotive Manufacturers Association.

as they used to cover in three or four states a few years ago.

And now we begin to see why the replacement parts specialist has come into the picture and why the changing channels of distribution.

Division of labor and specialization came in the automobile industry to make production more effective and economical.

Division of labor and specialization is coming in automotive distribution for the same purpose. This may take the form of more wholesalers or more departmentization of existing wholesalers—or both. The final answer will probably be—both.

Ten years ago when the practice of distributing through a selected few jobbers was accepted as good practice, most of our motor vehicles were in the cities. They were the toys of our people.

People didn't mind waiting a week or ten days for the repair man to order parts by mail or from the salesman of the jobber who covered three or four states and got around a couple of times a month.

Today ten hours is a long time to be without your car, because it is a part of the very fabric of your daily life.

And because people won't wait even ten hours for their cars and trucks nowadays, it has become good profitable distribution practice for local distributors—specialty wholesalers—to place convenient stocks at convenient places to serve repair men and their customers.

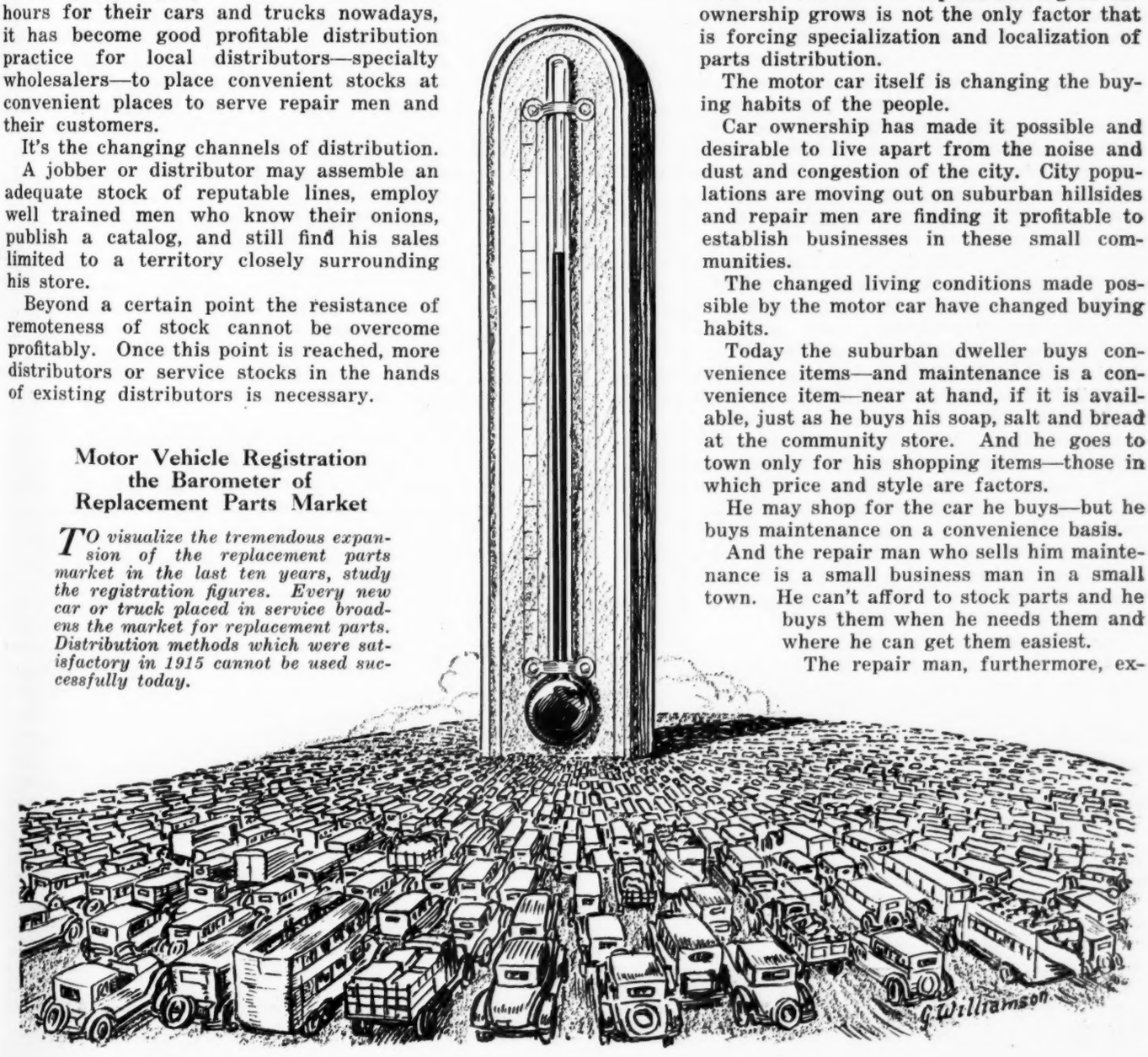
It's the changing channels of distribution.

A jobber or distributor may assemble an adequate stock of reputable lines, employ well trained men who know their onions, publish a catalog, and still find his sales limited to a territory closely surrounding his store.

Beyond a certain point the resistance of remoteness of stock cannot be overcome profitably. Once this point is reached, more distributors or service stocks in the hands of existing distributors is necessary.

Motor Vehicle Registration the Barometer of Replacement Parts Market

TO visualize the tremendous expansion of the replacement parts market in the last ten years, study the registration figures. Every new car or truck placed in service broadens the market for replacement parts. Distribution methods which were satisfactory in 1915 cannot be used successfully today.



Well, what of it. If there was half a million more cars and trucks today in the farm States of the northwest than there were in the whole United States ten years ago and if people want them fixed ten times as fast as they wanted them in those days—and the repairman won't buy a part until he knows he needs it, don't that mean more convenient stocks, conveniently located to render the service you are in business to render?

I wouldn't worry about "making" more wholesalers. You can't make grass grow on a stone. And you can't make replacement parts jobbers where there isn't an economic need for them.

Of course, you must satisfy yourself that there is an economic need for them and at what points that economic need exists.

Some general line jobbers today are recognizing the economic need for more replacement parts distribution units by establishing service stocks and branches at strategic distribution points—and where the economic need is not being met in this way, or where they are not doing a good job, independent replacement parts wholesalers are coming in to do that job.

But the tremendous growth of the market—a market that will continue to expand as long as car ownership grows is not the only factor that is forcing specialization and localization of parts distribution.

The motor car itself is changing the buying habits of the people.

Car ownership has made it possible and desirable to live apart from the noise and dust and congestion of the city. City populations are moving out on suburban hillsides and repair men are finding it profitable to establish businesses in these small communities.

The changed living conditions made possible by the motor car have changed buying habits.

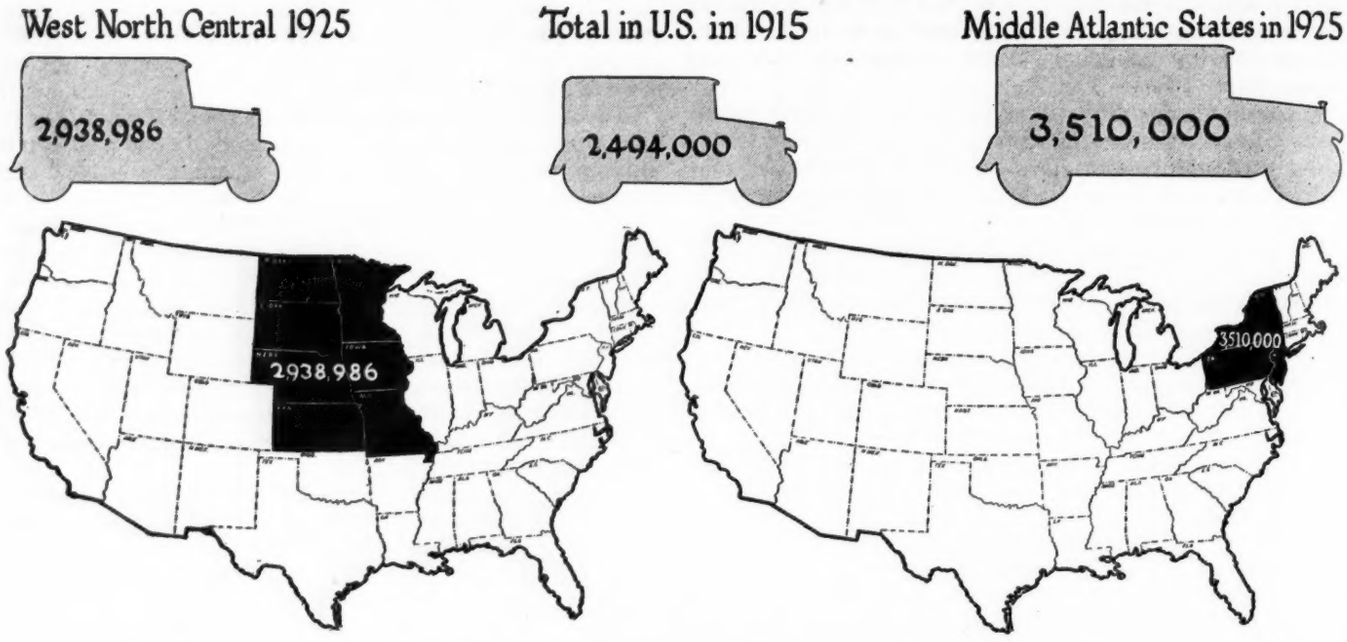
Today the suburban dweller buys convenience items—and maintenance is a convenience item—near at hand, if it is available, just as he buys his soap, salt and bread at the community store. And he goes to town only for his shopping items—those in which price and style are factors.

He may shop for the car he buys—but he buys maintenance on a convenience basis.

And the repair man who sells him maintenance is a small business man in a small town. He can't afford to stock parts and he buys them when he needs them and where he can get them easiest.

The repair man, furthermore, ex-

Sectional Motor Vehicle Registrations—1915 and 1925



In 1915 there was a total of 2,494,000 motor vehicles in the whole of the United States. In 1925, registrations in the West North Central States alone totaled 2,938,986. In the small area blocked off on the map at the right, representing the States of Pennsylvania, New York and New Jersey, the registration last year was 3,510,000. This gives some idea of the expansion that has occurred in the replacement parts market.

pects his jobber to provide parts for popular and orphan cars alike. The mechanic who values his time at $1 an hour or more won't go to his jobber for popular numbers, and run all over the county for the slow moving items. He judges his jobber on his ability to quickly furnish such parts as he needs when he needs them.

Quality must be right and the merchandise must flow to him smoothly.

And right here is where a lot of factory plans for short circuiting the economic channels of parts distribution go on the rocks. A manufacturer may say: "We will skimp on material, workmanship and accuracy just a wee bit—and crash the market on a price basis. We'll get out an inferior article, sell it way under the price of the original gadget, give longer discounts, put it on a few jobbers' shelves—and the repair man will walk a mile for Campbells."

But he won't.

Availability of your merchandise and quality are first and second with the repair man and price is a darn poor third. The mechanic needs, first of all, a ready supply, saving him time and effort and next he needs dependable merchandise that will make his workmanship satisfactory to his customers.

Inferior merchandise with a price appeal has only a limited market, principally among that type of repair man that is not dependable from the car owner's standpoint, and hence undesirable from your standpoint.

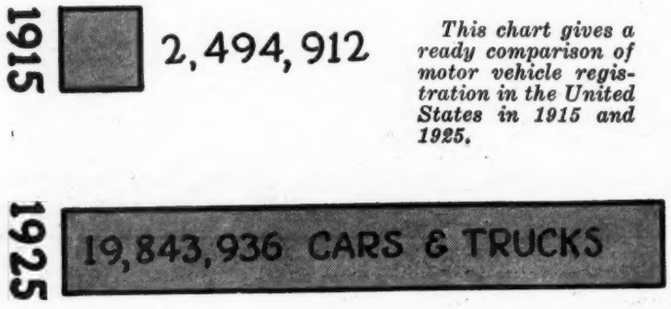
The turnover is a mighty important factor in profitable parts distribution both for the jobber and the factory. There is a real obsolescence in the parts business. As yet I have been unable to find anyone who knows what percentage of sales it actually equals. There is plenty of room for work here by the manufacturers' sales departments in making movement studies of various items and in helping the individual jobber to initially set his stock in correct proportion to turnover and keep it there.

The General Motors of Canada plan, which I understand is being used by some Buick dealers in this country at the present time, provides an interesting study of methods. In stocking for distribution parts, this company has classified various items according to rapidity of movement. Fast moving items are sold in larger numbers, limits are set on other classes of slower moving parts according to the registration of Buick cars in the distributor's territory, and parts that are seldom called for are shipped but sparingly, some actually being held at the factory or factory branch until ordered.

There is need of greater appreciation of this problem of stock control and inventory on the part of the manufacturer.

Replacement parts distribution will not be decided by politics, ancestry, palmistry or astrology. It will have to be settled on a purely economic basis as a problem of profitable distribution.

Replacement parts will be distributed by the organization that handles them most effectively for all concerned



This chart gives a ready comparison of motor vehicle registration in the United States in 1915 and 1925.

from manufacturer to the ultimate consumer—and makes a reasonable profit doing so.

The organization that will most effectively and profitably distribute replacement parts regardless of what it may call itself will be the one that studies local registration figures and local competition, knows the market in its territory and the buying habits of its car owners—and plans its service to meet those conditions.

The general line jobber lost ground in the replacement parts field a few years ago because as the number of his items rose he found it good business to weed out the slow moving stock and put emphasis on the merchandise that moved quickest and returned him the best profit. And in trying to apply to the replacement parts distribution the same principles that were successful in such things as automobiles and french horns, he learned this cardinal principle of replacement parts distribution, to wit: *An intelligently balanced stock of slow moving items must be carried to sell the more frequently called for parts.*

General Line Jobbers in Field

Just now we find general line jobbers re-entering the replacement parts field and succeeding and failing—not because they are general line jobbers but because of their methods. We see specialty jobbers succeeding and failing in parts distribution for the same reasons—their methods.

By and large, distribution follows the course of least resistance just as water or electricity. Some replacement parts distributors are worrying because the general line jobber is looking favorably upon the market. Some general jobbers are wondering if replacement parts jobbers will gradually add shop equipment, supplies and accessories and compete with them all along the line.

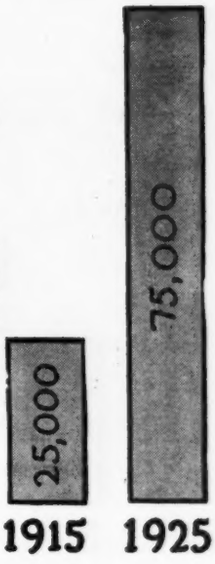
Both of these things are happening right now and they will continue to happen. The general jobber today is handling a respectable percentage of all the replacement parts not distributed by motor car factories through car distributors and dealers. But again, not because they are general jobbers, but because of the way they do the job.

It isn't practical to try legislation against the economic law of supply and demand. If the territory will support a parts jobber someone will enter the business there. Convenient stocks assure stock sales, that's the only reason for their existence. Acknowledge these facts and work out a distribution program strong enough to divert the business your way.

Let's not be bound too much by tradition. Let's approach the replacement parts problem with an open mind. Let's discard prejudices and try to find the solution that meets best the present tremendous market and the car owners who make that market.

Service Station and Repair Shops in United States —1915 and 1925

In 1915 there were about 25,000 service stations and repair shops in the United States. In 1925 the number had increased to 75,000. Furthermore, there were only 100 motor vehicles to each repair shop in 1915, whereas each of the 75,000 shops in business last year had an average of 266 vehicles to take care of.



Steel is Obtained Direct From Iron Ore in Sweden

THE old problem of producing steel directly from iron ore without the intermediate step of producing pig iron, has found a new solution in Sweden, and a report on the experimental work, which was done in the Electro-Chemical Department of the Royal Technical High School, Stockholm, was made to the Iron and Steel Institute at Birmingham recently by Henning Flodin.

The results of the experimental work were so encouraging that it was decided to make an application of the process on an industrial scale, and this was done at the iron works at Hagfors, Sweden. Analyses of the iron and steel produced at Hagfors showed a range in carbon content from 0.02 to 1.32 per cent, of phosphorous from 0.003 to 0.017 per cent, and of sulphur from 0.009 to 0.017 per cent. The steels were made in an electric furnace of 250-300 kw. capacity. As regards the controllability of the carbon content, Mr. Flodin states that during one of the furnace runs in Hagfors he was requested to vary the proportion of carbon in several successive tappings. When 0.40 carbon was required 0.42 was produced, and when carbon contents of 0.20 and 0.80 were aimed at, the results were 0.23 and 0.78 respectively. This showed that the carbon content can be controlled as readily as in the non-continuous open hearth process. The manganese and silicon contents were controlled in the same manner as in the open hearth process.

In the production of iron and steel by this process, a mixture of iron ore and coal is treated in a single furnace, and the resulting malleable iron or steel is poured into chills or other molds in the usual manner. In addition to the process being direct, it is continuous, in that the only interruption in the process is at the moments of tapping, when the continuous feeding of the ore and coal is stopped, to be resumed immediately after the tapping has been completed. Of course, ore and coal must be fed to the furnace at rates corresponding to the capacity of the electric energy supplied to fuse and reduce the ore. The details of the process are described as follows in the paper by Mr. Flodin:

"The reduction of the iron proceeds uninterruptedly and continuously. The metallic iron particles reduced from the ore may be compared to a fine rain continually dropping through the slag bath to the bottom of the furnace, where the molten malleable iron constantly accumulates. Practically speaking, the iron is in a fit condition at any moment for tapping in varying quantities in proportion to the rate of reduction, and it is hardly to be imagined that a higher degree of continuity can be reached for the production of iron.

"The raw materials used at Hagfors in the experimental furnace are Swedish hematite ore, and both English pit coal and Swedish charcoal. No refinement in special furnaces is necessary for the removal of phosphorous and sulphur to a sufficiently low point, the process being based on the principle that in the reaction the molecules are in contact, thus facilitating the transfer of the phosphorous and sulphur to the slag."

Brill-Westinghouse double-end control gas-electric rail car built for the Pennsylvania Railroad and described in this article

Brill-Westinghouse Build Rail Car With Gas-Electric Drive

Six-cylinder engine designed by Brill and built by Westinghouse develops 250 hp. Has dual valves and removable cylinder sleeves. Starting, stopping and speed control effected through one lever.

By P. M. Heldt

IN the rail motor car field, with an increase in the size of units produced there seems to have come a trend toward electric drive. Difficulties with mechanical drive naturally grow with an increase in the amount of power to be transmitted. Moreover, a mechanical drive for any large rail car has to be designed and built specially. For electric drive the standard railway motor, as used in interurban service, is directly available, and there is, therefore, no expense for development work; in fact, as far as the motors are concerned the electric drive offers all the advantages of a standardized product of manufacture, and the same also applies largely to the other elements of the drive—the generator and the control system.

Until about a year ago, The J. G. Brill Co., well-known car manufacturer of Philadelphia, in its rail car department confined itself to mechanically driven cars. But having sensed the growing demand for cars of larger capacity the company joined forces with the Westinghouse Electric & Mfg. Co. of Pittsburgh in the development of a Brill-Westinghouse gas-electric car. The first of these cars has been in service on the Reading Railroad between Trenton and Trenton Junction since last August. Another is in service on the Great Northern, three have been delivered to the Pennsylvania, and others are on order by the New York, Ontario and Western, the Boston and Maine, the Erie and the New York, New Haven and Hartford. The fact that orders for a total of twenty cars had been received only a few months after the first one was placed in service seems to indicate that the railroads view the electric drive with considerable favor.

A standard design of car has been developed, which has single end control. The three cars built for the Pennsylvania have double end control. This standard car is 60 ft. long and accommodates 50 passengers. However, the cars built for the Pennsylvania, while of the standard length, accommodate 61 passengers, and a number of cars now under construction have an over-all length of 73 ft.

The engine used on this car is a special design developed by the J. G. Brill engineering department, but which was built by the Westinghouse Electric & Mfg. Co. It is a six-cylinder vertical engine with cylinders cast in a block. The cylinder bore is 7¼ and the stroke 8 in. Two features of the design that distinguish it from the ordinary truck type of engine are that it has removable cylinder liners and four valves per cylinder. The valves are located in the cylinder head and are operated from two camshafts in the crankcase through long pushrods extending up the sides of the cylinders. These valve rods are enclosed within the engine, the spaces in which they are located being closed by two large cover plates each.

Symmetrical in Appearance

Looked at from either end, the engine is quite symmetrical in appearance. A pinion on the crankshaft at the forward end meshes with an intermediate gear, which in turn meshes with two camshaft gears, and each of the latter has meshing with it an accessory drive shaft gear. The crankcase extends 4 in. below the crankshaft center line and is provided with large inspection hole covers on the sides, through which inspection holes the bearings can be adjusted.

Each of the aluminum pistons is provided with four piston rings above the piston pin, including one oil control ring. The crankshaft is of 4 in. diameter and supported in seven main bearings. Lubrication of the engine is by the pressure system, a gear type pump being located at the bottom of a side compartment in the oil sump.

Many of the engine accessories are duplicated, largely for reasons of reliability, though in the case of the carburetor it is undoubtedly more a matter of uniform distribution. Fuel to the amount of 150 gal. is carried in a cylindrical tank under the floor of the car, from which it is fed by the Oil-Vac feed system to two Schebler carburetors. Ignition is by two Scintilla magnetos with impulse couplings for easy starting, which supply current to independent spark plugs in each cylinder. The operator can switch off either magneto at will. One magneto and the pump are located on the left side of the engine; the second magneto and a governor on the right.

Two Electric Starters

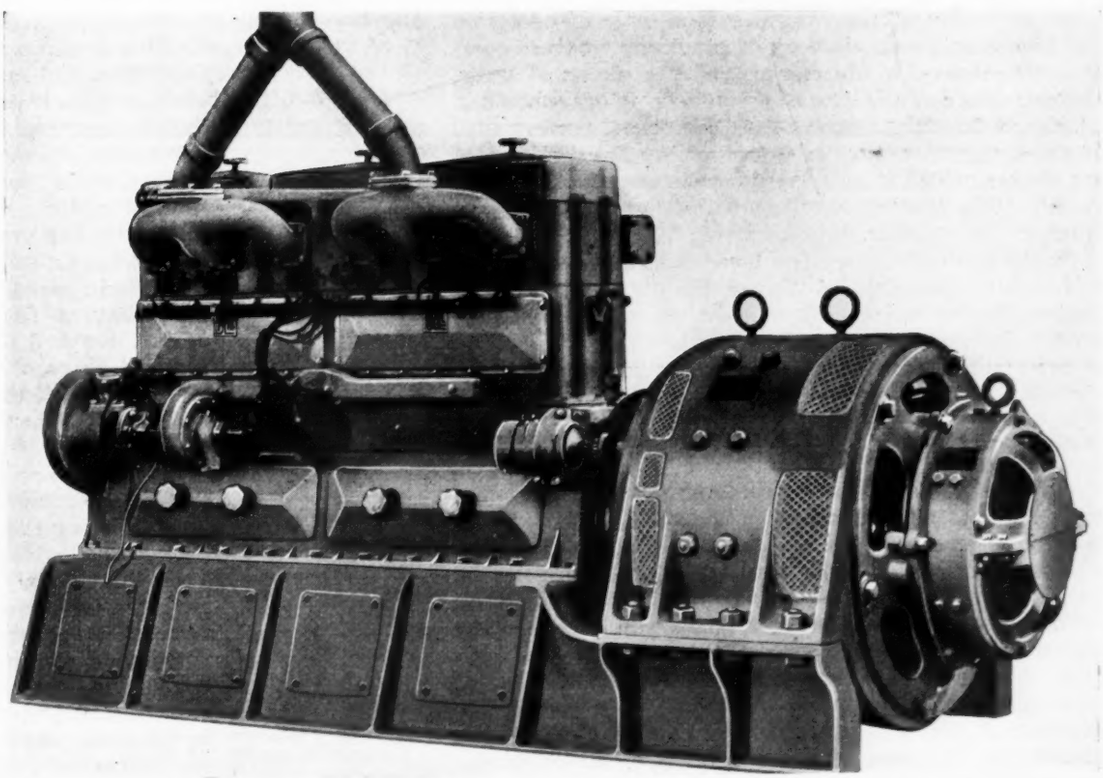
Starting is effected by means of two Leece-Neville electric starters mounted symmetrically on opposite sides of the engine at the rear, and attacking the engine flywheel through Bendix drives. It is stated that one of these starters alone is capable of turning the engine over, so the provision of two adds another factor of reliability. The use of two starters, however, was also based on the consideration that by employing two units a standard size of starter could be employed, no starter having yet been developed of a size adequate to start a 250 hp. engine under all conditions. The two starters are connected in parallel across a 32 volt storage battery carried on the car. This is an Exide battery of 215 ampere-hours capacity. It supplies current for the exciter fields, the lighting circuits, the control and the starters. Charging is effected from the exciter generator, to which reference will be made further on, the usual battery cut-out and a device designed to limit the charging current being employed.

Cooling is effected by means of a radiator of the finned tube type, mounted on the left side of the car. Side mounting of the radiator has the advantage that the cooling capacity is the same for both directions of motion. Aside from this, a side-mounted radiator is undoubtedly better protected against mechanical injury. Air drawn from underneath the car is discharged at the left. At the top of the radiator there is a 25-gal. expansion tank. The flow of air through the radiator is controlled by means of shutters. Mounted on the same base as the engine, and co-axial with it, is a six-pole electric generator of a standard Westinghouse type, which has a separate exciter mounted on an extension of its armature shaft. The common bed-plate of the engine and generator rests on rubber blocks set in steel enclosures on the center sills of the car frame. This mounting of the powerplant at the forward end of the car, with its axis in the longitudinal center plane thereof, is claimed to minimize the transmission of engine vibration to the car body.

The generator is driven from the engine through a disk type of flexible coupling comprising four 16-in. disks. The exciter also is a six-pole design, the same as the main generator. It is also separately excited, its field winding being connected across terminals of the storage battery.

The feature of the generating system is the load control. With ordinary series motors, direct-geared to the car axle, the current flow in the motor circuits is substantially proportional to the traction effort required to move the car. Thus when the car is running up a grade, whereby the traction effort required is greatly increased, the current flow will be greatly increased. If the voltage of the generator remained substantially constant, as with the ordinary shunt-wound type, the load which the generator would impose on the engine would be excessive, and the result would be that the engine would stall. To prevent this, the generator must be so regulated that as the current of the motors increases, the voltage will automatically decrease.

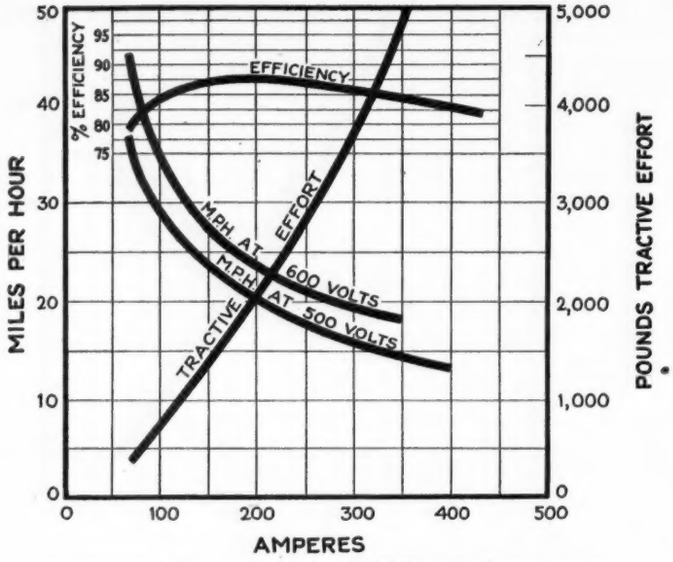
This is effected in the Westinghouse system by providing a reverse series winding on two of the field poles of the exciter, through which series (or large wire) winding the current to the motors is caused to flow. This will weaken the field of the exciter, so that it will produce less electromotive force, and this reduces the field strength of the main generator and decreases its electromotive force.



The 250 hp. gasoline engine-generator unit of the Brill-Westinghouse rail car

The two motors, both of which are mounted on the forward truck, are standard Westinghouse electric railway motors wound for 600 volts. They are rated at 140 hp. at 900 r.p.m., at which output the current consumption is 202 amperes. These motors are direct-geared, through helical steel gears, to the car axle, with a gear ratio suitable for the service. The motors are of the solid frame type and are self-ventilating.

Particular interest attaches to the control system. With decreasing car speed, of course, the amount of power required decreases. The consequence is that less fuel is burned in the engine, and as the rate of fuel supply to the engine is governed by the carburetor throttle, it follows that in order to decrease the speed of the car the throttle must be closed.



Characteristic curves of Brill-Westinghouse gas-electric powerplant

In the design of the control system, ease of operation has been considered. Instead of providing separate operating members for the engine and the electrical units, these various controls have been combined in one controller, which, so far as the operator is concerned, performs all of the control functions except reversing the direction of car motion, which is performed by the use of a plug type switch. The controller, of course, is located directly in front of the operator.

On the controller there is a lever for starting, stopping and varying the speed of the car, by joint control of the engine throttle and the throttle switch which closes the proper electrical circuits. Direction of motion, of course, is accomplished by means of a reversing switch which changes the direction of current flow through the motor field windings.

Electro-Pneumatic Control

The first motion of the control lever closes unit switches by which the motors are connected in circuit with the generator, and it also energizes the exciter field. The whole of the control is by the electro-pneumatic system which the Westinghouse company has developed for use on high speed electric cars for interurban service. The operator, by moving the control lever, closes electric circuits, whereby magnets are energized that operate valves in compressed air lines, and air cylinders operated by the compressed air close and open the switches. The two motors may be connected either in series or parallel across the generator, that is, as long as the car is in motion, and there is no commutating of the field connections. The entire control, therefore, is by means of the throttle.

The braking system is the standard Westinghouse air brake equipment suitable for this service. A motor-driven air compressor pumps up air pressure in two 16 by 72 in. main reservoirs, in addition to which there is a 14 by 33 in. auxiliary reservoir. The motor of the air compressor runs on current at 600 volts.

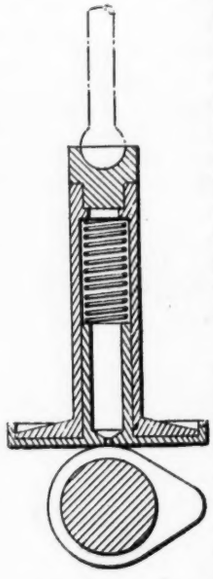
The standard car which the Brill company is offering to the railroads has single end control, but double end control can be readily provided. This standard car is 60 ft. long and accommodates 50 passengers, in addition to which it provides 90 sq. ft. of baggage room. There are three compartments. First in front is the engine room, 10 ft. 8 in. long; then follows the baggage room, and finally the passengers' section. The car has a wheelbase of 51 ft. and weighs 45 tons completely equipped but without load. With a gear ratio of 16-61 a maximum speed of 46 m.p.h. can be attained and with this ratio the traction effort is sufficient to make it practicable to haul a regular coach as a trailer. Geared up higher and run alone the car can reach a speed of 55 m.p.h.

New Valve Operating Mechanism

A VALVE mechanism which is claimed to insure quiet operation even though the clearance in the actuating train be several times that usually allowed, has been developed by Albert E. Hutt, Ardmore, Pa., and a U. S. patent has been issued on it.

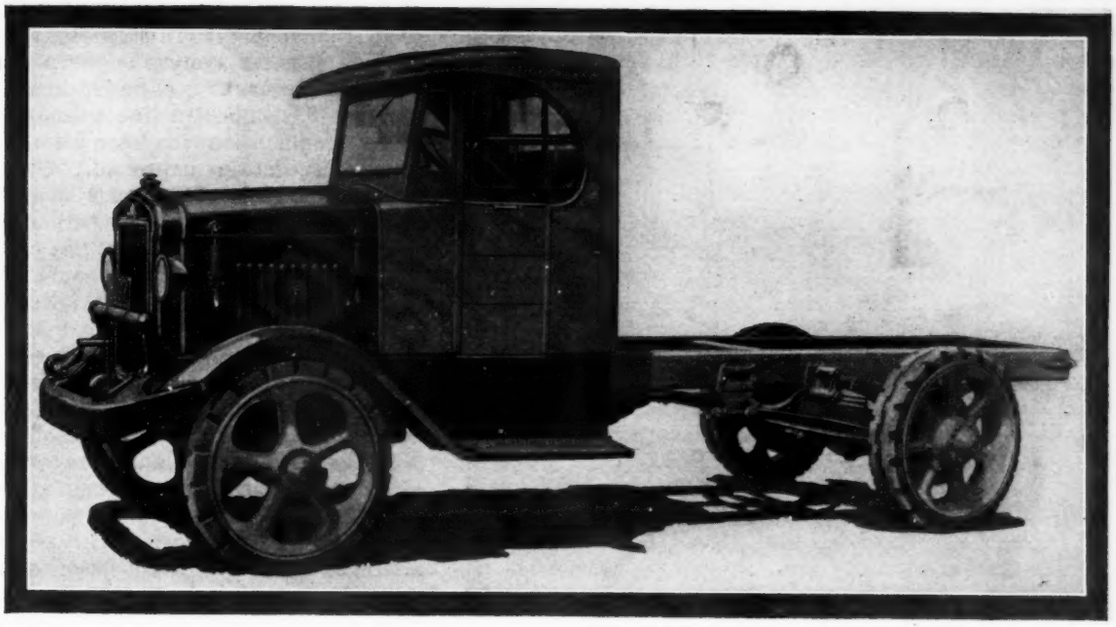
A cam follower is made use of, consisting of two members of which one is adapted to slide within the other. Both of these tubular members (see drawing) have heads or flanges at their lower end, and the head on the inner member also has a circumferential flange into which the head on the outer member fits snugly. Oil sprayed by the revolving parts of the engine and caught on the upper side of the heads, will work into the space between the two heads.

As in all valve operating systems, a clearance is allowed in the valve actuating train, and provisions are made to ensure that the break in the train when the valve is seated occurs between the two disk-like heads. To this end all other points in the train are made positive, so that when the valve closes under the influence of the valve spring, the parts cannot break contact. Another plan consists in so designing the cam contour that at the moment the valve seats the speed of all parts has been reduced to zero, so that there is no inertia effect tending to carry the cam follower further and take up the clearance.



Hutt cam follower designed to ensure noiseless valve operation

The clearance will be taken up by the light spring inside the cam follower forcing the inner tubular member down inside the outer member. This will slightly separate the heads on these two members, and the space between them will fill with oil. The vertical separation between these two heads constitutes the clearance in the valve train, and when this clearance is taken up during the next lift, the oil forms a cushion and prevents noisy operation.



A three-quarter view of the "Big Brute," showing the Fisher-built steel cab with sliding and disappearing doors and windows in position. Note how roof is carried forward to form sun visor.

GMC Heavy-Duty Trucks Redesigned; Prices are Increased

Fisher-built steel cab among features of new "Big Brute" line. Frontal design changed. Stroke of engine on 3½ and 5-ton models increased. Cylinder head in two pieces. Crankshaft is heavier.

By Leslie S. Gillette

NEW frontal design, important mechanical improvements and Fisher built steel cabs embodying passenger car features characterize the new heavy-duty line of trucks now being manufactured by the Yellow Truck and Coach Mfg. Co.

This announcement marks the first introduction of new truck models to be made by the consolidated organizations of the truck division of the General Motors Corp. and the Yellow Cab Mfg. Co. of Chicago, which were merged in August, last year.

Previously known as the K-72 and K-102 models, the 3½ and 5-ton chassis in their new form are both marketed under the title of "Big Brute," which is claimed to typify their rugged appearance. The previous 2½-ton chassis with certain modifications completes the heavy duty line.

Both the one-ton and the 1½-ton models introduced last spring are continued without mechanical improvements or variance in price. On the heavy-duty line, however, prices f.o.b. Pontiac have been slightly increased. In a few weeks a group of three specially developed truck-tractors of 5, 10 and 15-ton capacity, respectively, will complete the GMC line.

In presenting the "Big Brute" line, the manufacturers claim to offer the most completely equipped trucks in their field, especially with regard to the maintenance viewpoint of the owner and the providing of maximum comfort for the driver. In cooperation with engineers of the Fisher Body Corp., a new indestructible all-steel cab is furnished as standard equipment at no extra cost. A special type of Fisher vision-ventilating one-piece windshield is employed. In addition, an automatic windshield cleaner is installed. By continuing the roof over the windshield a sun visor is provided, the lines of which blend well with the general design of the cab.

On either side of the windshield posts, permanent glass windows are fitted, while sliding curtains completely enclose the cab when the doors are in position. The latter, extending from the seat level to the floor, are of the disappearing type which, when folded, drop into metal pockets below the floor level. In the "down" position, the steel doors are protected from dirt and damage and can be lifted into position easily and in a few seconds. The sliding curtains provided with large windows of Pyralin are carried in metal tracks in the roof of the cab when not in use. To allow the driver accessibility to the levers when vertical type hoist bodies are employed, the rear window is of the double sliding type.

Maximum Comfort for Driver

Special attention has been paid to the interior fittings and appointments so that the driver will enjoy maximum comfort when engaged in long haulages. The seat, containing Marshal springs, and the backs, which are of form design, are upholstered in Fabricoid. In addition to being adjustable in the vertical plane by 2 in., the seat is formed in two sections to enable quick access to the battery and fuel tank, both of which are located under the seat. Cowl and dash are integral, with all instruments mounted in convenient form on the panel.

To guard against damage from road shocks, the steel cab, besides having extra heavy reinforcements at all points of stress, is mounted on the frame in a three-point type of suspension with contact formed through

Front view of the "Big Brute" chassis, showing the new fenders and the bumper arrangement on the 3 1-2 and 5-ton models.

shock absorbing rubber disks held in metal containers.

That the frontal design of the new "Big Brute" represents a departure from the conventional front end appearance of heavy trucks is apparent by studying the accompanying illustration. The front fenders are of such design as to withstand damage, loosening and noise through road vibration. In accomplishing this, the contour of the heavy gage, baked enamel fenders is necessarily somewhat unusual. They are further protected by a channel bumper attached to an extension of the frame. Upon this extension are also mounted the radiator guard and tow hooks so that in the event of damage to any or all of these three units, the extension can be replaced without disturbing the frame proper.

Radiators on both 3½ and 5-ton models have been materially changed to present a new appearance. The shell, completely enclosing the core, is now made of cast aluminum finished in black enamel, but with the encircling bands and GMC trademark contrasting is polished aluminum. In addition to increasing the capacity of the core and improvements in the air flow, the radiator is now carried on rubber shock absorbers to insure longer life. Headlights of the two bulb type are attached to the radiator shell and are finished in aluminum and black to match the general scheme.

More power and smoother operation has been secured in the 3½ and 5-ton chassis engine by increasing the stroke length ½ in. so that the cylinder dimensions are now 4½ in. bore by 6½ in. stroke. While the N.A.C.C. rating is unchanged, the maximum power has been increased to 53 b.h.p. and the piston displacement is greater by 31 cu. in.

Modifications also have been made in the engine to give longer life and better servicing features. The crankshaft is heavier and more rigid with special lugs forged on the webs to obtain proper balancing without removing metal from the webs themselves. Copper tubes were formerly employed to carry oil to the piston pins, but on the redesigned connecting rods, which are lighter and stronger than before, an oil line is drilled through the main web direct from the lower bearing to the upper end. Piston pins are held to closer limits and given a lapped finish, while among several improvements on the pistons is the employing of dished heads.

To reduce possibility of leakage or warping and to provide greater convenience in maintenance, the previous single casting cylinder head is now made in two separate castings. In line with these changes the shape of the combustion chamber has been changed and the water circulation improved. Cylinder sleeves of improved materials are given a Brinnell hardness test and are finished with two distinct honing operations.

Two different metal alloys are now used for the valves, whereas the intake and exhaust were formerly of the same material. High chrome silicon steel is used for the exhaust to withstand the heat while the intake valves are formed of chrome nickel steel. A new process introduced in the manufacture of the valves to enable them to offer greater resistance to heat is by "coining" the heads which leaves the "skin" of the metal in place.

Improved wearing qualities and smoother operation of the timing gears is accomplished by burnishing the teeth through rolling the gear with a hardened master gear for a considerable period of time. Carburetor settings, water pump and manifolding have also undergone changes to make for more effective operation. The connecting rod pins of the crankshaft are now drilled with large horizontal holes which automatically carry a reservoir of oil. In addition two holes in the crankpins assure the proper quantity of lubricant at high and low speeds. The large hole in the crankpin acts as a separator and effectively cleans the oil passing through to the main bearings. Timing gears are now assured of a constant feed of oil at all speeds through a minor change in the crankcase. The method of supporting the engine on rubber blocks is employed.

On the 3½ and 5-ton models the clutch pilot bearing has been increased in size and the clutch pressure plates redesigned on all three models to give a greater off-set, while the disks have woven fabric facings on both sides. Transmissions are larger and stronger with increased factors of safety. All main shafts and counter shafts have been increased in diameter with the number of splines on the former increased from six to ten. Gears are larger in diameter and given an improved method of heat treatment. Teeth of the full depth involute type are burnished in the same manner as the timing gears already referred to, while the length of the bearing surface on all sliding gears has been increased.

Mountings for carrying the bearings are now in individual containers instead of being located directly in the case as formerly. In addition, the inner races of the bearings are locked on the shaft with nuts, thus eliminating the transmission of any thrust through the case. All bearings have been increased in size and capacity. Side openings are provided for power take-off connections while the two larger models have arrangements for overhead take-offs of various types.

Virtually no alterations have been made in the rear axles with the exception of a change in the gear ratio, which is increased from 7¼ to 8½ on the 2½-ton chassis. A new floating cam assembly employed on the rear axles has considerably increased the braking power and allows the brake shoes to fit snugly all round the drum under every condition. Slight modifications have been made on the front axles while the tread at the front on the 3½ and 5-ton chassis is increased from 67 in. to 71⅞ in. A ball and socket type tie rod is used instead of the pin and forked type to give a better assembly and permit of adjustment to take up wear.

Easier steering has been accomplished by changing the pitch of the worm, the lowering of the ratio and an improved angle of the steering column.

Cowdray Brake Testing Machine Adapted for Production Work

Redesign of apparatus makes it suitable for use in automobile plants. Structural steel trestle with four pairs of rolls and electrically driven dynamometer chief features of construction.

By W. L. Carver

THE brake testing machine which was brought out by the C. H. Cowdray Machine Works of Fitchburg, Mass., about a year ago has been redesigned recently to facilitate its use in manufacturing plants as well as in service stations. With the new machine the brakes can be tested in a much shorter time. It consists essentially of a structural steel trestle carrying four pairs of rolls for supporting the vehicle wheels, and an electrically driven dynamometer unit which serves to give a direct indication of the mean torque required to turn any wheel against the holding power of its brake through at least one complete revolution.

As illustrated by Fig. 1, one form of trestle, which is adapted to either production, laboratory or service work, consists of a framework and inclined approach made of structural steel shapes. In order to accommodate cars of varying wheelbase, the front pairs of rolls are mounted on individual rolling carriages, with a section of channel track which telescopes over the rear portion of the track. This rolling carriage is equipped with a bumper to prevent the car wheels from overrunning, and means are provided for locking the carriage after the car is in place.

For production work a pit may be used to bring the car down to the level of the rest of the line, or the trestle and roll assemblies can be arranged to allow progress of the car in the direction of the line.

In the arrangement shown, the front pairs of rolls are carried back to the rearmost position as the car is backed off of the trestle. When another car is driven on, the front wheels pass successively over the rear rolls and the short section of track, and they then drop into the depression between the front pairs of rolls, moving the carriages along until the rear wheels are in place. In this way the front rolls are automatically adjusted to the wheelbase.

The rolls are iron castings with striped cylindrical surfaces, which approximates the conditions of adherence between the tires and a concrete highway. Each roll is mounted on a steel shaft, which in turn is mounted in ball bearings. The pair of rolls which form the cradle for each wheel are connected together by chains and sprockets, with oil guards over them. Guide flanges are provided on the end rolls and the outer ends of all roll shafts are squared for connection with the dynamometer unit.

In the illustration a dynamometer unit is shown connected at the front left wheel. Each end of the upper or drive shaft of the dynamometer is machined with a square end similar to those on the roller shafts. By making the dynamometer drive shaft double-ended, one unit with a single direction of rotation can be used at both sides of the car, and for testing holding power in both directions. Fabric universal joints incorporating slip joints fit all of the square shaft ends.

Briefly, the dynamometer unit consists of a cast-iron gear box mounted in vertical ways on a carriage to allow of aligning the square shaft ends with the roller shaft. At the bottom of the gear box a ½ hp. electric motor connects to the drive shaft through three spur gear reductions and a planetary unit, the latter being restrained from rotation by a sector on its frame. This sector engages with a rack bar through an intermediate pinion and the rack bar bears on a pair of coiled springs. This arrangement, in conjunction with another gear and an indicating dial, forms a reaction dynamometer which reads in pounds at a 16 in. radius (the radius of the average tire). In conjunction with the drums which drive the wheels, the reading is multiplied by 5 to obtain the braking force in pounds at the point of contact be-

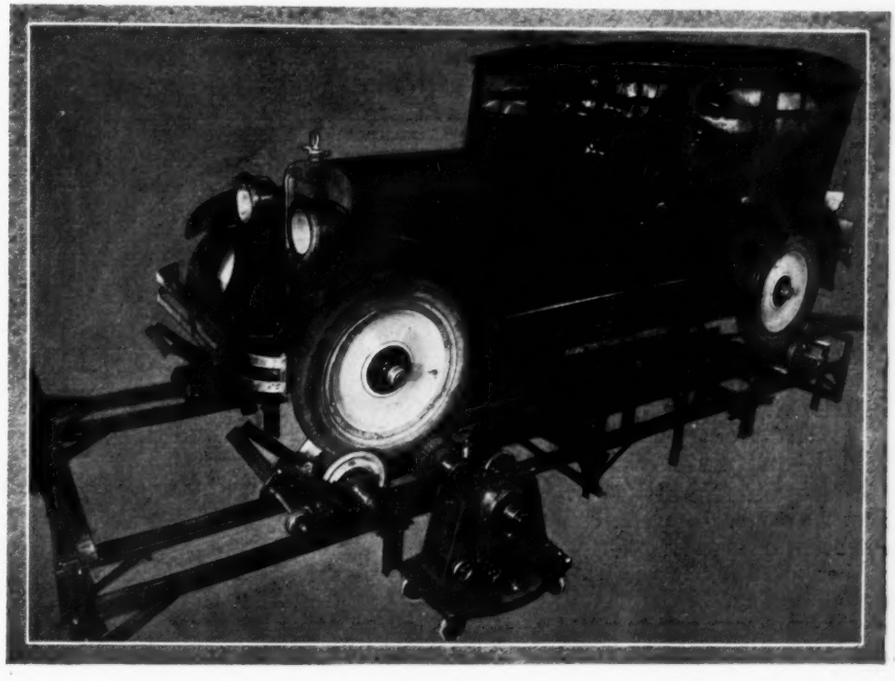


Fig. 1—Car in place for test. Dynamometer unit shown in foreground is equipped with .5 hp. electric motor and measures brake torque in lbs.

tween the tire and the road. The total torque, which can be delivered by the drive shaft, is 4800 lb.-in.

Control of the testing unit is by an electric switch located on the gear box. As stated previously, the drive shaft can be adjusted to various heights. Also, an auxiliary hand crank is provided to allow quick adjustment of the square end on the upper shaft to that of the square end on the roller shafts. The carriage is mounted on swivel castors so it can be moved around quickly in cases where only one testing unit is to be used at all four positions.

In production work on cars all of the same wheelbase, four testing units are used and need not be uncoupled from the roller shafts. If only two wheels carry brakes, two units can be used in a similar way.

The uses of the brake testing equipment can be illustrated best by the tabulation of some of the test results and subsequent adjustment of errors. These examples refer to cars with four-wheel brakes. The figures under each heading represent the mean braking force in lbs. at the working radius of the tire when measured over at least one complete turn of the wheel. It should be understood that during the test, the engine is idle and the wheels are rotated by the dynamometer units with the brakes applied in the usual way or by means of a pedal depressor which has been developed by the same company.

Car No. 1

Braking Force before Adjustment as Indicated by Dynamometer unit:

Left rear brake	550-600 lb.
Right rear brake	200-250 lb.
Left front brake	75 lb.
Right front brake	100 lb.

In this condition of adjustment 40 ft. were required to bring the car to a stop from a speed of 20 m.p.h.

After adjusting to bring the braking pressures to the best figure allowable by the hook-up between front and rear, the readings were as follows:

Left rear brake	515-540 lb.
Right rear brake	530 lb.
Right front brake	225-275 lb.
Right front brake	240-290 lb.

When adjusted to show these readings, the car stopped in less than 20 ft. from a speed of 20 m.p.h. This car as well as the car covered by the next set of figures had the original factory settings when placed on the testing machine.

Car No. 2

Indicated Readings before Adjustment on the Brake Testing Machine.

Left rear brake	600-800 lb.
Right rear brake	650-800 lb.
Left front brake	100-200 lb.
Right front brake	125 lb.

In this instance the adjustment of the rear brakes was not changed, but the front brakes were adjusted to show the following readings:

Left front brake	350-550 lb.
Right front brake	425-550 lb.

Before adjustment, 28 ft. were required for a stop from 20 m.p.h., after adjustment, 18 ft. After the car had been driven for seven months by the owner with no further attention to the brakes, 19 ft. were required for a similar stop. Where two figures are shown under a single heading, they indicate the limits of variation of braking pressure through one complete revolution of the wheel. While not prepared to make a final statement as to the reason for this variation, the manufacturer of the brake tester is inclined to believe that these variations can be attributed largely to distortion of some of the members of the brake mechanism. The two above examples, which are fairly typical of the results of tests on many other cars with mechanical four-wheel brakes, are evidence of a tendency to adjust four-wheel brakes so the major portion of the braking effect is produced at the rear end. The foregoing examples are indicative of the possibility of better braking through correct adjustment.

Uniform Results at Lower Cost

It is stated that in an organized production line results comparable to those shown in the two specimen tests can be obtained with no increase in labor expenditure and that, as a rule, more uniform results can be achieved with a saving in cost. The reason for this is that the men engaged in adjusting brakes will have means at hand to indicate exactly what must be done and that the brake testing device indicates clearly when the desired standard of braking performance has been obtained. In other words, brake testing will become a strict mechanical routine instead of an operation dependent upon the skill and judgment of the operator.

In addition to its production possibilities, the brake tester is adapted to laboratory and research work. In fact, work in the engineering department can lead to the establishment of definite standards of readings which will insure definite performance on the road. These same readings can be used as the standards for brake setting on the production line.

One of the problems that may be studied in the laboratory by means of the brake tester is the effect of drum distortion. In conjunction with one of the various forms of pedal pressure gages the brake tester offers a means of quickly and accurately determining the relation between pedal pressure and braking effect. The type illustrated will accommodate all makes of car without the need of special set-up operations.

As a service tool the brake tester is said to facilitate brake adjustment, reducing the time required to 25-40 per cent of that allowed in flat rate schedules. Moreover, the same as in production, after the job is done there is assurance that the brakes hold substantially equally, as shown by the tables printed above. In fact, the tabulation for car No. 2 was made in a service garage where the brake tester is in use. It is stated that after a brief experience the operator can tell readily whether a brake needs relining, and can quickly spot distorted or eccentric brake drums and defects in the linkage. The electrically driven dynamometer has been approved by the Underwriters Laboratory.

Pocket Size Decelerometer

As an adjunct to the work of adjusting brakes and testing their results in service, the same company has developed a pocket size decelerometer. This instrument has a pressed steel case which measures 1⅝ in. by 2 7/16 in. by 3¾ in. and weighs about one lb. The internal mechanism is the usual balanced pendulum assembly which is damped magnetically. When the guard plate is swung over the dial as the instrument is to be carried around, an internal lever locks the pendulum assembly.

For a test of the stopping characteristics of a vehicle, the instrument is placed on the floor boards or some other approximately level support with the arrow on the case pointing in the direction of travel. As the brakes are applied, the reading on the dial is observed when the pointer comes to rest momentarily. The figures on the dial show the distance in which the car would have stopped at a speed of 20 m.p.h. although the test can be made at any ordinary speed, say 15 to 35 m.p.h.

N. A. D. A. Makes Strong Stand Against Too Liberal Finance Terms

Frames platform covering all phases of automobile financing at annual sales convention in Chicago. Endorses standard terms of one-third down, balance in 12 months.

THE National Automobile Dealers Association, at the Ninth Annual Sales Convention in Chicago during the national show strongly denounced extremely liberal finance terms in the sale of automobiles as detrimental to the best interests of the automobile merchant and the industry in general. Furthermore, as the spokesman of the distributor and dealer, it definitely outlined a platform concerning automobile financing which it is prepared to promote aggressively in 1926.

That platform, adopted in the form of a resolution, recommended the following methods in handling time sales:

1. That all finance companies adhere to the standard terms requiring one third down payment and completion of the deal within twelve months on new cars and forty per cent down, balanced in not more than twelve months on used cars.

2. That commercial bankers revise standards of commercial credit to allow greater credit to automobile dealers with fast turning lines than to those in other lines whose goods move more slowly.

3. Elimination of all dealer endorsement of customer paper as a means of removing a legal contingent liability. This also includes elimination of all practices requiring the dealer to sign a separate repurchase agreement where his paper is taken without recourse.

4. That where dealer endorsement is required, the dealer be allowed to change a sum sufficient to set up an adequate reserve to cover himself for the risk he is guaranteeing.

5. That the practice of manufacturers who are paying subsidies to finance companies be immediately discontinued.

6. That every encouragement be given to local independent finance companies which have played a tremendous part in the upbuilding of volume sales in the automobile industry.

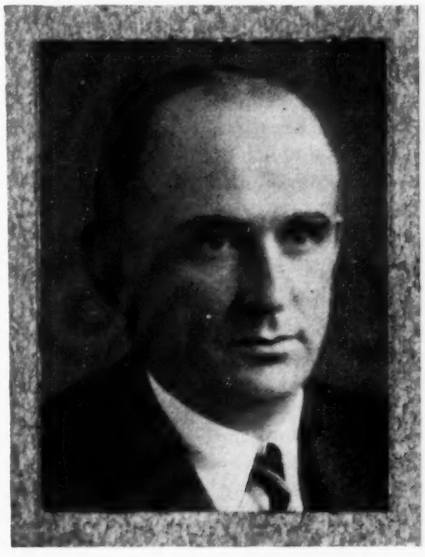
7. That the automobile dealer be allowed complete freedom of choice in his selection of the finance company with which he is to do business.

8. That the right of the manufacturer to set maximums above which the cost of financing must not go, be granted, but that these limits should be made with a view of permitting the finance companies to charge the maximum legal rate of interest, plus actual cost of making adequate credit investigation, plus the actual cost of maintaining a diligent collection force, plus an adequate charge to protect either the finance company on non-recourse or the dealer where endorsement is required, plus a legitimate profit to the finance company.

9. That all advertising campaigns in which unwarranted stress is made of low rates and low down payments be immediately withdrawn or canceled and that no new similar campaigns be contemplated or executed.

10. That the automobile dealers throughout the United States support this platform.

This action of the N. A. D. A. followed a day's session given entirely to the finance question, in which the principal speakers were: C. C. Hanch, general manager, National Association of Finance Companies; Charles E. Gambill, Chicago Hupmobile distributor and retiring president of the N.A.D.A., and Emlen S. Hare, vice-president, Hare & Chase, Inc.



New President of N.A.D.A.

Charles B. Warren was elected president of the N.A.D.A. at the recent Chicago convention. Mr. Warren is head of the Warren-Nash Motor Corp. of New York and has been active in the affairs of the N.A.D.A. for many years.

While holding strongly to the soundness and desirability of time payments in automobile buying on a proper basis, Mr. Hanch pleaded that all branches of the automobile industry keep unimpared the methods that in the past have proven sound and profitable. Mr. Hanch emphasized the great degree to which losses increase after terms pass a certain point of liberality, pointing out the following as a result of a survey he has just completed:

From a unit loss standpoint, paper with 16 to 18 monthly payments is 57 per cent more hazardous than paper with 12 monthly payments. The average loss on repossessed cars with balloon notes or more than 18 monthly payments is 341 per cent higher than on cars with 12 monthly payment. The average losses just mentioned may not be in strict accord with very recent experience; however, they are relative and may be taken as correctly showing the difference in hazard of paper with different maximum maturities.

"It is gratifying to say that the tendency to deviate from sound credit terms has apparently passed the peak," said Mr. Hanch, "and there seems to be a disposition on the part of both dealers and finance companies to keep terms within safe limits. If this situation is not upset by excessive competition among manufacturers, bankers throughout the United States undoubtedly will continue to loan large sums of money to prudently managed finance companies so that a large production of automobiles may be continued and the general prosperity of the nation promoted.

Cooperation is Needed

"To accomplish this result there should be cooperation of manufacturers, dealers and finance companies with the approval and support of the bankers. Any tendency toward unsound policies or practices should be eliminated. Practices which do not offer an adequate profit to the dealer are unsound. Practices which prevent the dealer from freely functioning as an independent merchant are unsound. The practice of giving and receiving rebates must be abandoned. This does not refer to legitimate compensation to dealers for assuming by endorsement or repurchase agreement a part of the hazard in connection with automobile financing. Floor stock financing must be carefully checked to make sure that cars are not financed which are not in stock. Duplicate financing must be prevented. The dealer should make a sufficient investment in floor stock so that he has more than a moral obligation to sell it. The value of the used car must not be inflated before it is financed."

Mr. Gambill warned that the industrial future, not only in automotive lines but all others, rests on financial safety and he pointed out the precarious position that straining of financial sources through too liberal time sales will develop. He was emphatic in his contention that while inflation of credits will sell quantities of new cars, the dealers will suffer such losses that the marketing end of the business will be in serious danger.

Emlen S. Hare presented a paper outlining the advantages of non-recourse financing.

While the finance session of the convention attracted greatest interest because of the tenseness of the situation at the present time and the importance of the subject and its effects upon the future prosperity of dealer and factory alike, the merchandising session also was largely attended and enthusiastically received.

This program included a talk by Edward Payton, market analyst with the N. A. D. A. entitled: "Planning the Car Sales for 1926." Other features were, "Can 1920 Model Salesman Close 1926 Buyers?" by H. D. Bullock, sales specialist of the N. A. D. A.; "Dealer's Dollars and Used Car Sense," A. R. Kroh, Sales Promotion Advisor of N. A. D. A. and "Sell Cars—Not Terms" William B. Burruss, sales consultant. N. A. D. A.

The high spot of the banquet and trade frolic was Harry Gardner's presentation of that intensely striking satire on factory merchandising of cars entitled: "Introducing America's Super-Super Motor Car, the Super-Asinine." Harry Gardner is general manager of the Cincinnati Automobile Dealers Association and in presenting his skit as "vice-president in charge of sales of the Super-Asinine Motor Co." he developed a method of appeal to both factory and dealer that was unique and effective.

The convention program also included a most complete and interesting presentation of 1926 market possibilities by James H. Collins, Vice-President and Research Director of the Chilton Class Journal Co.

The association adopted a resolution again appealing to Congress for the complete repeal and elimination of the so-called war tax.

In the absence of Harry M. Fancher, Secretary-Treasurer of Tom Botterill, Inc., Denver Hudson and Essex distributor, G. V. Orr, President of the Overland Motor Co., Chicago, presented his unique plan of dealer education and cooperation in management to insure profitable business. Mr. Fancher was ill and unable to attend.

Problems in Cleaning of Automotive Materials Discussed

At a recent Industrial Cleaning Conference held by the Oakley Chemical Co., H. C. Duggan reviewed some of the more important cleaning problems which confront automotive manufacturers and how Oakite materials and methods have been applied to them.

For still tank cleaning of such parts as window channels, heaters and hub flanges from two to six ounces of cleaning material per gallon of water at 200 deg. can be used to remove the drawing compounds and rust preventatives from pressed steel parts and the cutting oil covering from cast steel pieces. All parts are hot rinsed when followed by an enameling or Parkerizing operation.

One-third ounce of cleaning material per gallon of water is usually satisfactory for cleaning such parts as fenders, running board aprons, disk wheels, brake drums, fans, cylinder blocks, oil pans and bolts and nuts in automatic washing machines.

Revolving spray type cleaning machines assist the cleaning agent by mechanical action of the solution being sprayed with force on the parts to be cleaned. One-third ounce per gallon usually is sufficient for machines of this type.

A tendency to foam is apparent in cleaning solutions used in paddle type machines due to the action of the paddles which throw it at the parts to be cleaned in regular torrents. A non-foaming cleaner in strengths varying from one-third ounce to one ounce per gallon of water is satisfactory in these machines.

Washing should be followed by a rinsing operation when the parts are to be enameled or japanned. After the rinse, if the rinse water contains any lime the part must be wiped before it is completely dry or white spots will be left on the metal where drops of water dry off. These are sometimes blamed on the cleaner but are caused by lime deposits from the rinse water.

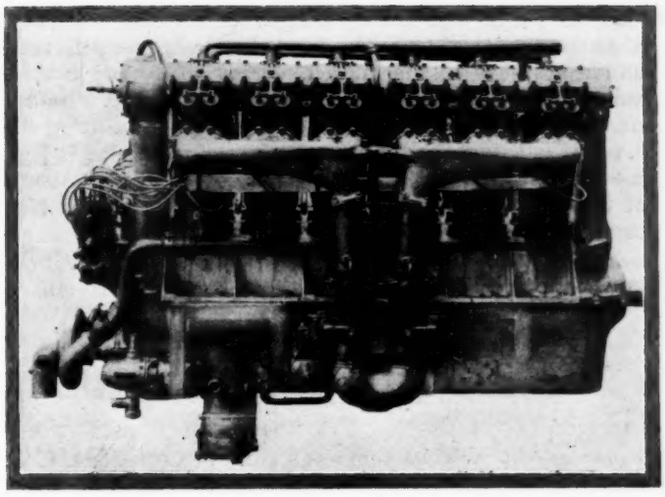
After oil quenching operations, parts such as gears and ball bearing races, which can come to the cleaning solution before they have cooled, can be effectively cleaned in 30 seconds in a still tank solution containing at least eight ounces of cleaner per gallon of water.

When the parts are cooled before they can be placed in the cleaning solution the time required will be about 30 min. This time can be cut in half, however, if two gallons of kerosene oil per hundred gallons of solution are added.

Screw machine parts are seldom rinsed after cleaning because they must be kept free from rust. Girls usually inspect and work them so if they are covered with strong alkali materials the operators' hands become sore and cracked. A solution containing four ounces of a mild cleaner per gallon will prevent this condition.

One ounce per gallon of water will neutralize the average soldering job so that corrosion will not set up under the painted surfaces.

Renault Wins French Aircraft Engine Contest



Renault 12-cyl. 5¼x7 in. aircraft engine which won the French Government's competition

Four of eight engines presented for trials complete them successfully. Best showing in separate competition based on lightness, low head resistance and fuel economy is made by Lorraine-Dietrich.

By F. W. Bradley

FIRST prize in the French Government commercial aviation engine competition, for which two million francs were offered, was won by a 12-cylinder 450 hp. Renault engine, which accomplished the whole of the thirty tests of eight hours' duration each. The competition, which was open to engines of 350 to 450 hp., called for a preliminary five-hour bench test, two hours in the air, followed by 240 hours on the bench.

Thirteen engines were entered for the competition, but only the eight following were presented for trial: Salmson, Panhard, Farman, Lorraine-Dietrich, two Renault and two Breguet. Of these, five completed the tests: Renault, direct drive propeller, 3052 points penalization; Panhard-Levassor, sleeve valve engine, 10,384 points penalization; Renault geared-down propeller, 32,277 points penalization; Lorraine-Dietrich, 37,123 points penalization.

In addition to a scale of penalization, starting from four points for changing a spark plug and increasing to 100 points for changing any part connected with the lubrication system, the cylinders, rods or crankshaft, the individual eight-hour tests could be cancelled under certain conditions, among these being one hour lateness in starting, a stop of more than one hour, any stop during the first four hours' running, loss of power, etc. The winning Renault was the only one to accomplish the whole of the thirty tests. The Panhard-Levassor Knight engine, which was classed second, had three of its trials cancelled.

Separate Awards Are Made

Separate awards on the basis of lightness, fuel economy and low head resistance gave the following results: Lorraine-Dietrich, 2735 points; Panhard-Levassor, 2565 points; Renault gear-down propeller, 594 points; Renault direct drive propeller, 575 points.

The winning Renault is a new model 12-cylinder V-type engine of 134 by 180 mm. bore and stroke, of which only a few have been produced. The cylinders are separate steel forgings with welded-on sheet-steel water-jackets and have four valves inclined in the head. The crankshaft is carried in seven plain bearings, the caps being of duralumin and secured to the upper half of the horizontally divided aluminum crankcase. The central crankshaft bearing is of much greater length than the others. I-Section connection rods, with white-metalled bearings on a bronze backing, are made use of. Pistons are aluminum alloy with four compression rings above the piston pin and one scraper ring below it. The piston pin is fixed in the piston.

Auxiliary Drives From Rear

All the auxiliary drives are taken from the rear, and one of the features of the engine is the method of mounting the camshaft housings independently of the cylinders on three points: At the rear, on an aluminum housing containing the vertical drive shaft; at the front on a similar housing acting as an oil return from the overhead gear to the crankcase; at the center by a duralumin support bolted to the centre of the crankcase between cylinders 3 and 4. The shafts transmitting the drive from the crankshaft to the camshafts have a universal joint at each end. These features of design have been adopted in order to reduce the time necessary for adjustment after lifting or changing a cylinder, and are in accordance with the requirements of European air service companies. The engine has a compression ratio of 5 to 1, and the timing is as follows: Intake opening 10 deg. lag; intake closing 50 deg. lag; exhaust opening 56 deg. lead; exhaust closing, 10 deg. lag. Each pair of valves is operated by means of a T-shaped rocker projecting from the camshaft housing, the horizontal branches of the T-member being in contact with the valve stems and adjustment between rocker and valve being provided by means of a pinch bolt.

A transverse shaft at the rear of the engine drives two 12-cylinder magnetos, there being two plugs per cylinder. The water pump is driven off a horizontal shaft below the magneto platform and the gasoline pump is parallel with it. The distributor for the compressed air starter is driven off the extremity of one of the camshafts, and the revolution counter off the other shaft. Four gear-

type oil pumps are used. Two of these, one at each end of the engine, scavenge the base chamber; one delivers oil under pressure to the main and connecting rod bearings and another supplies the overhead valve gear. In addition, the Renault centrifugal oil purifier, running at 6000 r. p. m., is fitted, the oil being delivered to this as it leaves the scavenging pumps. The purifier being on the bottom of the basechamber is very easily dismounted for cleaning when the engine is in the plane.

Four Zenith carburetors are fitted, the air for which is taken in through the engine basechamber. During its trials the Renault maintained 420 hp. at 1500 r.p.m. Weight without tanks and radiator, but with fuel for five hours' running is given as 5½ pounds per horsepower. The rules fixed a maximum weight of 7.2 pounds per horsepower.

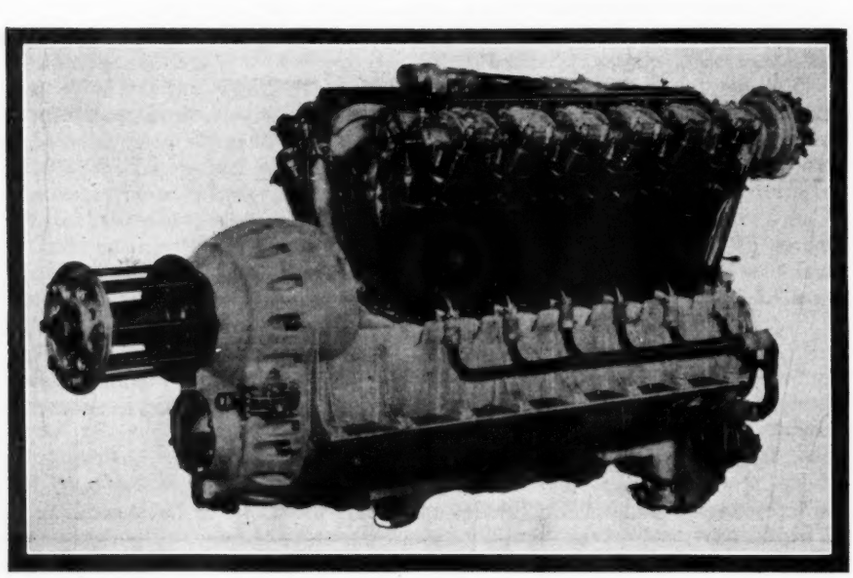
The Renault engine with geared down propeller, which secured third place in this competition, is of the same general design as the winner, with 12 cylinders of 134 by 140 mm. bore and stroke. The spur pinions reducing the propeller to half engine speed are lubricated under pressure and the propeller shaft is mounted in roller bearings.

Liberty Airplane Engine is Constructed With Two-Speed Transmission

TO make possible the full utilization of the power developed by supercharged engines at high altitudes, the U. S. Air Service has bulit an engine of the Liberty type with a two-speed transmission. At the ground the low speed is used, the propeller turning slowly in the denser air, while the engine runs at rated speed. At higher altitudes, as the engine speed increases, the pilot shifts to high gear, increasing the speed of the propeller in respect to the engine speed.

The application of a super-charger to an airplane engine brings up unusual conditions of propeller design and operation. The super-charger maintains constant engine power with increasing altitude. while the power absorbed by the propeller at constant speed decreases with the decreasing air density. The engine speed is thus allowed to increase, and would soon reach an excessive figure. Variable pitch propellers have been used, in which the blade angle is increased to compensate for the decreasing air density and so maintain the engine at its rated speed at all altitudes. Propellers of this type have not been particularly successful, however; hence the engine with two-gear reductions was built.

In the "two-speed" engine, standard Liberty engine parts are used, mounted on a special crankcase which contains the transmission. Two sets of hardened nickel steel gears are used, mounted on ball and roller bearings. The jack shaft, also mounted on ball and roller bearings, is connected to a regular Liberty crankshaft by a flexible spring coupling. The driven gears float on the propeller shaft. Between the two gears the shaft is splined, and a sliding toothed clutch transmits the drive through either set of gears. The gear shaft mechanism is connected to a lever in the pilot's cockpit. To shift the pilot closes the throttle and with a short jerk of the lever changes from one speed to the other. This engine has been placed in a DeHaviland airplane, with a 14-ft. four-blade propeller, and many successful flights have been made. With the engine turning at 1700 r.p.m., the propeller turns about 850 r.p.m. in low gear, and about 1150 r.p.m. in high gear.



Liberty airplane engine with two-speed transmission, built by U. S. Air Service

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A NEW solid-woven anti-squeak material for use between the metal surfaces of automobiles where they might otherwise rub together and squeak or work loose and rattle has been developed by the L. H. Gilmer Co., of Philadelphia and is called Sealedge. The company claims that this material can be cut, stamped or punched to any desired shape and that patterns can be cut from it in any direction without regard for the direction of the warp and with no tendency for the material to ravel along the cut edge.

The tendency to ravel is overcome by treating the material with a sealing compound that binds the fibers and prevents squeaking when metal surfaces slide over it. The fabric is then coated with graphite to still further reduce the tendency to squeak. The material is woven from cotton in one solid piece and in various thicknesses so that it is not necessary to make thick strips by building them up from several plies of the material. Besides eliminating squeaks, Sealedge is said to deaden the small vibrations set up in a moving car and also to tend to even up the small inequalities of the metal surfaces between which it is placed. This is said to reduce the cost of manufacture by making extreme accuracy in finishing operations unnecessary without any sacrifice of quality.

IN the January 14th issue of *Automotive Industries* the statement was made that the new Jordan Victoria model was an all-steel body made by Edw. G. Budd Mfg. Co. This was incorrect since, although all other Series J Jordan bodies are of Budd construction, the Victoria body is manufactured by the Ohio Body Company, of Cleveland.

Smoothness and Sheen are Obtained With Wiborite Enamel Finish

New product of Ault & Wiborg Company Varnish Works said to require minimum of rubbing and polishing.

UNUSUAL smoothness of sprayed finish which requires a minimum of polishing or rubbing and a moderate sheen that eliminates the necessity of polishing for some classes of production and ease of production handling are the features claimed for Wiborite lacquer enamel, the latest product of the Ault & Wiborg Co. Varnish Works of Cincinnati, Ohio. In addition to black, 48 standard colors are available and where the volume of business warrants, special shades will be furnished.

As a rule, the new enamel is to be applied over an oxidized oil base and the various materials which enter into the preparation of the body for the enamel coats also are produced by the same company. The lacquer is shipped in cans in a concentrated or thick condition which, it is said, maintains the pigments or colors in suspension and tends to produce more nearly the anticipated shade. Two grades of thinner are standard. Wiborite standard thinner when mixed with the heavy lacquer will produce a satisfactory finish and prevent blushing under any reasonable conditions of humidity. Where economy is paramount or humidity is controlled, Wiborite D. D. thinner can be used at a saving in cost.

Appearance Improved by Usage

When the specified materials are used and one of the three schedules of application is followed, the final finish is hard, tough and nail-proof and its appearance is improved by usage or wear. No tendency to crack or check is present and the finish does not mar, chip or flake readily. Like all standard lacquer finishes, neither heat nor cold have any unfavorable effect and the surface is impervious to hot and cold water, gasoline, grease, soap and mild acids and alkalis.

In the production or repainting routine, all of the materials in both undercoats and final finish are air drying. The lacquer dries very rapidly and the following coat can be applied within one hour. Undercoat materials are adapted to brushing, spraying and flo-coating. Naturally, these materials, having an oil base, require liberal time for air drying and where possible, high temperature oven drying is recommended as it produces a uniformly harder base for the lacquer coats. The manufacturer emphasizes the necessity of using the recommended materials for the undercoats and the specified thinner with this lacquer.

Three typical schedules of materials and methods have been prepared to produce first, the highest type of finish; second, a suitable finish for high production jobs in medium and low price classes where economy is an extremely important element, and third, a refinishing program. With the first two, it is essential that the metal of the body be perfectly clean and the third schedule can be used only when the varnish finish already is in unusually good condition and free from deep checks or cracks so that by sand papering a smooth continuous base can be made. These schedules follow:

Schedule A, for the best type of finish.

1. Spray Aultco bond coat, bake 2 hrs. at 250 deg. Fahr.
2. Spot or solid glaze with Aultco knifing putty, bake 1½ hrs. at 250 deg. and sand smooth.
3. Spray Aultco surfacer, bake 2 hrs. at 250 deg.
4. Spray Aultco sealer, bake 2 hrs. at 250 deg.
5. Spray Wiborite enamel, 2 double coats, air drying 2 to 4 hrs. between coats. The enamel for these coats is to be reduced by an equal volume of Wiborite standard thinner for superior flow and permanence. After second double coat has air dried for 4 hrs. or more, rub with No. 320 Tri-M-ite paper and benzine and dry thoroughly.
6. Spray Wiborite flowing coat composed of 4 parts of Wiborite thinner to one part of Wiborite enamel. Dry over night and polish with Wiborite polish.

Schedule B. For moderate or low priced jobs. Time factors are based on air drying program which can be supplanted by the shorter forced drying time requirements.

1. Spray Aultco bond coat, air dry 24 hrs.
2. Spot glaze with Aultco knifing putty, air dry 24 hrs. and sand smooth.
3. Spray Aultco surfacer, 1 or 2 coats. Air dry 18 hrs. after each coat.
4. Spray 2 double coats of Wiborite as in schedule A. Allow second double coat to air dry over night. Polish.
5. (Optional) Apply Wiborite flowing coat as in schedule A.

If the metal of the body is unusually smooth, one coat of Aultco surfacer is sufficient. The enamel may be applied directly over the Aultco bond coat.

Schedule C. For use in refinishing when the varnish finish is in good condition and can be sanded to a smooth base.

1. Spot glaze if necessary with Aultco knifing putty and air dry 8 hrs.
2. Spray Aultco bond coat, air dry 24 hrs.
3. Spray 2 or 3 double coats of Wiborite as in schedule A.
4. (Optional) Spray Wiborite flowing coat as in schedule A.
5. Polish with Wiborite polish.

New Machine Designed to Determine Unbalance of Flywheels

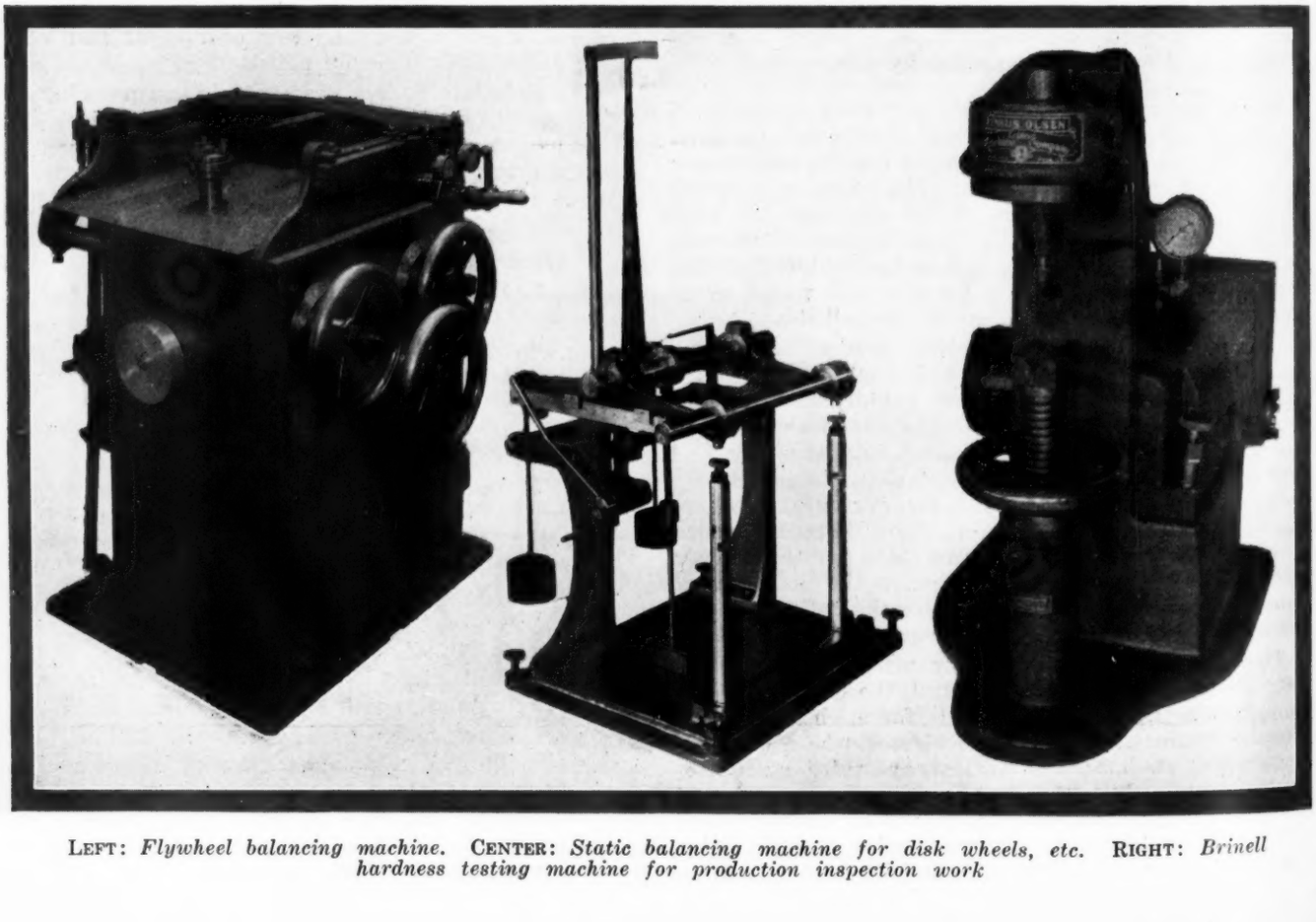
Axial and radial planes of unbalance found by mechanism of Tinius Olsen Testing Machine Co. Apparatus also developed for balancing disk wheels and for testing Brinell hardness.

SEVERAL new testing machines, including two for the balancing of rotative parts and one for hardness testing in regular production work, have been placed on the market recently by the Tinius Olsen Testing Machine Co. of Philadelphia. The most interesting of these from some points of view is a machine for rapidly determining both the axial and radial planes of unbalance of flywheels and the amount or moment of this unbalance. It embodies some of the same principles as the Carwen-Lundgren static-dynamic balancing machine made by the same firm.

Heretofore it has generally been considered sufficient in the case of flywheels to determine the radial plane and the amount of unbalance, but the Olsen Company asserts that in the case of high speed flywheels, especially those of considerable width of rim, it is essential that the axial plane of unbalance be also located.

Referring to Fig. 1 herewith, the flywheel balancing machine consists of a box-like base or housing within which is contained most of the mechanism. The end of a vertical shaft will be seen projecting from the housing on top. This is fitted with an "adapter" for flywheels of any particular size of center bore.

The structure which carries this shaft has two degrees of freedom; that is, it is capable of vibrating around two axes at right angles to each other. One of these axes is determined by a pair of knife edges and passes through the axis of the vertical shaft, near the top of that shaft, parallel with the axes of the three hand wheels on the front of the machine. The supporting structure being locked against vibration around its other axis by means of the handle seen at the right near the top of the machine, the flywheel is spun around its axis by an electric motor, and if it is out of balance it will set the machine vibrating around the knife edge axis. Then, by means of the central handwheel, the shaft carrying the flywheel is moved up or down until the vibration ceases, which it does when the plane of unbalance is at the same



LEFT: *Flywheel balancing machine.* CENTER: *Static balancing machine for disk wheels, etc.* RIGHT: *Brinell hardness testing machine for production inspection work*

level as the axis of the knife edge support. Any vibration is indicated by standard dial gages, of which there are two on the front of the machine, near the right-hand top corner, one for vibration about each axis.

When vibration ceases, the axial plane of unbalance has been determined, being indicated by the pointer at the right. Next the supporting structure is locked against vibration around the knife edge axis and freed so as to be capable of vibration around a vertical axis at right angles thereto, by means of the handled latch near the dial gages. The flywheel is now spun again and will vibrate around the new, vertical axis. From the indication of the gage the operator can judge fairly accurately the amount of unbalance, and by means of the hand wheel on the right he then introduces an artificial moment, equal to what he considers the moment of unbalance to be, the effect produced being the moving of two rotatable weights, located on opposite sides of their common axis of rotation, axially and in opposite directions. The machine is kept running and the vibration will be increased or decreased, according to whether the angle between the unbalanced moment of the flywheel and that created artifically is less or more than 120 deg. From the effect on the amplitude of vibration as indicated by the dial gage, it is possible to judge the angular relation between the two moments, and by means of the hand wheel at the left the artificial moment can then be moved angularly until it is in direct opposition to the unbalanced moment of the flywheel.

Vibrations Shown by Indicator

It is not really necessary to judge the angle between the two moments at the beginning, because as soon as the left hand wheel is moved, the vibrations indicated by the dial will decrease or increase, thus showing whether the point of balance is being approached or moved away from. If the operator's judgment was correct as to the amount of unbalance, vibration will cease; in any case, it will be greatly reduced. A finer adjustment for both amount and angle of unbalance can then be made by means of the two handwheels. If either of the handwheels is moved in the wrong direction the gage will at once indicate increased vibration, and vice versa, hence the adjustment resulting in the complete elimination of vibration is quickly found, and the moment of unbalance and its angular position can then be read off on dials back of the two handwheels. The limit of accuracy of the machine is said to be ⅛ oz.-in.

With this machine from 12 to 15 flywheels can be balanced per hour, according to the manufacturer. The axial and radial planes of unbalance and the moment of same being determined, the flywheel is corrected by drilling holes at the proper point, removing the necessary amount of metal.

A new static balancing machine has also been developed for which it is hoped to create a demand in the automotive industry for balancing such products as disk wheels. It is claimed by the Tinius Olsen Testing Machine Co. that the ordinary balancing ways are not sufficiently sensitive for such purposes, and the new machine is designed for increased sensitiveness combined with ease in operation. It comprises a base with a pair of pedestals upon which is supported on knife edges a horizontal framework which carries a pair of bearings for supporting a shaft, an indicator arm extending vertically upward, a pair of rods on which scale weights may be placed, and a horizontal graduated bar along which weights may be slid.

The part which is to be statically balanced is secured to the shaft or arbor seen on the right in the photograph, this shaft being made of a form to fit the particular product. The shaft is such a fit in the bearings that it will remain in any position in which it is placed. If the part is out of balance, when its heavy side is toward the knife edge support, its moment around these supports naturally is less than when it is away from these supports, so if the part is rotated in the bearings and it is out of balance the indicator hand will swing to and fro and the range of swing indicates the moment of unbalance. The object of the scale weights is to compensate for differences in the weights of the parts tested. It is intended to equip this machine with a small electric motor to rotate the shaft and part being tested.

An improved Brinell hardness testing machine which adapts this device to production testing has been placed on the market recently. The load or pressure of 3000 kg. is applied to the ram carrying the ball by hydraulic means, by simply turning the knurled wheel seen at the right in the photograph. The load is controlled automatically, and both underloading and overloading are prevented.

The hydraulic pressure is applied directly to the main plunger, and no packing is used, hence the accuracy is not affected. The gage (which may be seen in the illustration), indicates to the operator the progress of the test.

The specimen is clamped by the hand wheel seen in the foreground between the V block and the ball, and pressure is then applied by means of the knurled handwheel or head. The machine is provided with a "fractional horse power" electric motor to suit service conditions, which develops the pressure, and it is therefore self-contained. Olsen illuminated microscopes are furnished with these machines for obtaining the Brinell hardness numbers, and the machines can be used all day long in so-called "100 per cent" inspection without fatigue of the operator, it is claimed.

This hardness testing machine is made in two sizes. The smaller of the two has a gap of 4 in. and is adapted for making tests on parts up to 7 in. in diameter, while the larger one has a gap of 7½ in. and will take pieces up to 15 in. in diameter. The former has a net weight of 300 and the latter of 600 lbs.

Rubber Given Longer Life

RUBBER'S durability with respect to the effects of light and heat can be increased about 600 per cent as the result of tests by the U. S. Bureau of Standards, it is announced. It has been known for some time that deterioration of vulcanized rubber by oxidation can be delayed by the use of substances which are themselves easily oxidized and which act as anticatalysists of oxidation, the Bureau's report states.

"Recently two of the largest rubber companies simultaneously patented almost identical antioxidants," the report explains. "A sample of the material received by the Bureau from one of the companies has been employed in rubber compounds which were then subjected to an accelerated aging test. The Bureau's results substantiated the claims that the durability of rubber can be materially increased."

THE Kempsmith Manufacturing Company, Milwaukee, Wis., has issued a booklet describing its line of milling machines and their various applications. The booklet also contains a lot of mechanical data that is often needed in the shop and the drafting room.

Just Among Ourselves

Dealers Speak Their Minds About Financing

CHICAGO show week wasn't marked by the explosion of any bombshells this year, but once again the National Automobile Dealers Association was responsible for the most important news emanating from the various gatherings held during the week. The N.A.D.A. went on record clearly in favor of non-recourse financing of retail sales, in opposition to subsidies to finance companies by car manufacturers and in opposition to attempts on the part of carmakers to dictate the finance companies with which their dealers should do business. It is specially interesting to note that the dealers urge that finance companies be permitted to charge rates sufficient to permit adequate credit and collection service in addition to the legal rate of interest in the various states. This would indicate a feeling on the part of the retailers that the amount of finance charge, within reason, is not an important factor in sales resistance. As a matter of fact, only a few car manufacturers have brought to bear on their dealers really strong pressure to use a particular finance company. Recommendations have been frequent, but actual attempts to force dealers to use a specific plan have not been so numerous as might be thought from the amount of discussion the subject has had.

* * *

Size Isn't Essential to Company Stability

WE enjoyed particularly last week going to the dealer dinners held in Chicago by some of the smaller car manufacturers. Building a dealer organization for a relatively small company today is a task, but it is apparent that some of the smaller outfits are making real progress in this direction. While executives of some of these companies perhaps were overly optimistic about the huge place in the industry that is waiting for them and their dealers in the next few years, the actual figures regarding financial condition and number of dealers given in one or two cases indicates far greater stability in some of these outfits than was present a year ago. There are, of course, still a number of weak sisters, but present indications are strong that a thoroughly sound future exists for a number of the smaller companies which are working along constructive lines at present.

* * *

The Speechmaker—He Can't Please Everybody

SPEECHES this year at dealer gatherings were much along the same lines as in past years. Exaggeration was present in considerable quantities and inspirational speakers dragged in from outside fields failed in most cases to inspire. As usual also, the greatest amount of good sense was talked by the factory executives themselves, company presidents, engineers and production managers in many cases getting across indirectly a sales message to the dealers at least equal in effectiveness to the direct exhortations of the sales managers. The fault of excessive length in speeches seems to be on the decline, although men who organize the speaking programs in some cases still have to recognize that one man may make a 60-minute speech seem short while another can stretch fifteen minutes into an eternity. But all in all, there were a lot of good parties staged, both in Chicago and New York this year, and if the dealers and distributors enjoyed them half as much as we did, they had a mighty fine time.

Quality Getting More Attention Than Price Now

THERE was a noticeable lack of talking about prices at the Chicago gatherings. More attempts were made to get the retailers to think in terms of quality than ever before. Almost every sales manager spent some time during his after dinner talk proving to his dealers that they had a product to sell which embodied higher qualities of design and workmanship than anything else within $300 of its price. As usual some of the statements about quality were so very strong as to make implicit belief impossible, but there was a lot of good sound talk about the desirability of emphasizing performance and quality features rather than price alone in the merchandising appeal.

* * *

S.A.E. Summer Meeting—Back Again in Indiana

WELL, the S.A.E. is going out to French Lick Springs, Indiana, for its summer meeting. That's the home of Pluto water, which caused J. A. C. Warner to remark that probably a good many Plutonic friendships would result from the meeting. Mr. Warner says, however, and undoubtedly with truth, that the sessions are going to be much better than the pun. And talking about better sessions reminds us of an interesting plan carried out at this year's S.A.E. annual meeting. The chairman of each session was given a leather-bound loose leaf book with his name printed in gold letters on the cover; the book contained names and information about the speakers he was to introduce, instructions as regards length of meeting and discussion, announcements to be made and similar data to help him conduct the session in an efficient manner.—N. G. S.

Incidental Export Charges May Double Price of Cars in Foreign Markets

Exporters of motor vehicles can further their interests abroad by considering where, when and how these charges are levied

AFTER exporters of American automotive products have reduced their selling price to the limit by efficient production methods and careful consideration of packing and shipping methods the foreign dealer incurs charges varying from $40 to $400 per car which must be added to the retail price. The fact that these charges are more or less stationary in spite of anything the manufacturer can do is no reason why they should not be given careful consideration in determining export selling policies. Such price increments as these may make all the difference between success and failure of a foreign sales campaign, especially in those countries where prosperity has not returned since the war and in which price continues to be a most potent selling argument.

It his been customary for American manufacturers to get full payment for automotive products before the shipment is made. The price which the dealer pays usually includes export boxing, inland and ocean freight, marine insurance and duties. When the shipment arrives at the port, however, the dealer is confronted with a series of incidental charges which may increase the cost of the shipment to him as much as 40 per cent.

According to the Automotive Division, Department of Commerce, the most important of these charges in most foreign markets is interest. The dealer must borrow in order to make full payment in advance of shipment and interest must be paid while the cars are crossing the ocean, going through customs and being transported to the dealer's establishment and until they are sold and full payment received either from the buyer or from a finance company or bank.

To central European countries this period, exclusive of the time cars remain on the dealer's floor unsold, may be from six to ten weeks. Cars bought from European manufacturers incur these same charges, of course, but shipments can be made so much quicker, usually within a week or two, that the amount of interest charges is considerably less.

To aggravate the situation and raise greater obstacles to sales of American cars, interest rates on automotive paper are generally much higher than in this country. For example, a Vienna dealer would have to pay at the rate of about 20 per cent per annum for money to finance a shipment of cars. On a $5000 shipment from America his money might be inactive for a period of 12 weeks and interest charges would amount to $250. If he had bought the same order from a European source which would have tied up his money for not more than three weeks, probably, his interest costs would have been less than $60.

Obviously, such a differential in cost is a very important item in the dealer's determination of what cars to handle and in the public's choice of cars to buy. That American cars have been so widely sold in competition with foreign vehicles in spite of this great disadvantage speaks highly for the manufacturing and distribution methods of the industry.

If export financing methods can be revised to relieve foreign dealers of some of this onerous burden it should be materially helpful in advancing sales of American products.

Lighterage, Insurance, Etc., Included

Other charges which must be met by automotive importers as is generally known include lighterage, insurance, unpacking and remounting charges, documentation fees, inland transportation, taxes, brokerage fees and various other items of similar nature. Not all of these charges are levied in each country, the practice varying to a large extent so that retail prices may have no similarity even in two adjacent countries. Thus a shipment to Hamburg, Germany, would incur incidental charges, including interest, of from $40 to $65 per car, while one to Paris would be charged something over $200 per car and one to Brussels from $300 to $400 per car.

In England, unpacking, remounting, cartage, lighterage, dock charges, documentation, etc., are usually cared for by transport companies who bill the importer for a lump sum. On medium-priced open cars the combined charges, including dock dues and port rates, is around $17. On closed cars the average combined charges would be about $22. Interest rates are from 10 to 12 per cent on the landed cost of the car.

Most French importers finance their purchases through companies which charge a flat interest rate varying from 2 to 5 per cent of the invoice value. Other charges vary

little regardless of the type of car. The cost of these items ranges from $44 for cars with an American list price of $750 up to $53.50 for cars in the $1500-$2000 price class. A Government stamp tax is also levied as is a 12 per cent luxury tax. The cumulative effect of these items is such as to eliminate most of the dealer's profits unless they are carefully figured in advance and special arrangements made with the freight agents who handle most of the operations.

To deliver a car from the free harbor at Hamburg involves charges for trucking, dock service, unpacking, setting up, etc., amounting to from 180 to 280 marks or $40 to $65. The most important items are trucking and labor charges since the port is a considerable distance from the city. Dealers financing with German money pay about 15 per cent interest. New York credits opened by German banks cost about 2 per cent per month. General taxation of automotive dealers is high.

Shipments to China through Shanghai involve interest at 6 per cent for 6 mos., which covers the period between opening the letter of credit and selling the consigment, a ¼ to ½ per cent bank fee for opening a letter of credit, dock fees of 5 per cent of the duty paid, a small lighterage and cartage charge of not over $8 and uncrating and assembling charges of about $23 per car. Cars shipped up-country are liable for a tax of one-half the import duty paid.

Costs to Pekin or Tsiensin

The additional charge over those given in the last paragraph for sending a medium priced car to Tsiensin or Pekin would include about $130 for ocean freight, unloading and brokerage fees of about $43, and for Pekin shipments a customs duty of 2½ per cent of the Shanghai invoice value. Automotive paper is reported to be handled for 6½ per cent.

Shipments to Rio de Janeiro undergo charges of a port tax of 2 per cent on the C. I. F. value at all ports except Santos, custom brokerage fees of about $9, cartage about $7.50, setting up costs of about $15, a charge varying from $2.50 to $10 for opening a letter of credit and a stamp tax on commercial credits of $2 per $1000. Automotive paper interest rate is about 8 per cent.

Most of the light cars shipped into Belgium through Brussels are shipped knocked down and are destined for foreign assembly plants. The Automotive Division of the Department of Commerce from whom this information concerning export charges has been obtained believes that considerable economies could easily be effected in the incidental charges paid by importers of American motor vehicles if careful study was given to the subject.

Average charges for several cars ranging in price from $800 to $1800 include documentation, handling, watchmen, customs declaration, adjustment of setting up and transportation from Antwerp to Brussels and total between $305 and $420.

Dutch Add Statistics Duty

Unpacking, remounting and dock charges constitute the principal expense items involved in delivering cars to dealers in Holland. In addition there is a Dutch statistics duty of 1/10 per cent of the retail value, besides inland freight, insurance and bank charges.

There appears to be no standard practice followed in meting out charges against importers in Spain so that there is always some uncertainty as to just what the charges will be until they have been actually levied. Average charges including only those levied from the time of the cars' arrival until they are released for delivery to dealers, range from $32 to $46. Groups of cars up to 5, 10, 20 and 50 units receive proportionately lower rates.

The incidental expenses incurred in the port of Bombay range from about $50 for cars valued at $750 to $75 for $2000 cars. These items include port charges, drayage fees, unpacking, setting up and interest charges. Interest is usually figured on a basis of 6 per cent for eight weeks.

Total charges for low, medium and high priced cars delivered to a dealer in Santiago, Chile, from Valparaiso are $83, $96 and $114 respectively. This includes customhouse fees, documentation, unloading, lighterage and cartage, freight, assembling and interest.

An automotive shipment to Mexico, after it leaves Larado, Texas, through which all rail shipments are routed, incurs the following charges: Cartage from railway to brokers warehouse $1 per ton; brokerage fees $2 per ton; consular invoice fee 5 per cent of value; documents and stamps $0.75 on each shipment; cartage and river charge $0.50 to $1 per ton; handling at customhouse $0.50 to $1.50 per ton; revision at the custom house $0.50 to $2; broker's commission ½ of one per cent. Average cartage charges in Mexico City are 5 pesos per ton. Usual financing arrangement is to draw a 60 day sight draft against documents bearing interest at 6 per cent. To this is added bank collection charges of about 1 per cent.

Incidentals in Philippines

Combined incidental charges on a low priced car shipped to the Philippines is about $70 of which interest and exchange amounts to about $24. A car listed at over $3000 incurs charges of over $400 of which $30 is exchange and $100 interest. Unpacking and remounting costs about $30 per car.

Delivery of a car to a Stockholm dealer costs from $40 to $50. Of this total, harbor charges accounts for about $10, documentation and interest (the latter estimated at 8 per cent of the selling price) $10 to $14, and custom clearance, hauling and assembling $20 to $27. Heavy cars are charged about $17, $19 and $55 for harbor charges, documentation and interest, and customs clearance, hauling and assembly respectively.

NEXT WEEK—

Statistical Number

NEXT WEEK'S *Automotive Industries* will be the Annual Statistical Issue, devoted to the presentation of complete and concise information regarding all phases of the automotive industry.

Some of the items which will be covered are: United States and world automotive production and registration, dealers and service, automotive instalment buying, United States and foreign exports, and complete specifications for American and foreign passenger cars, trucks, buses, tractors, airplanes, stock parts, etc., etc.

Charts and tables will be used extensively so that this mass of information (over 100 pages) concerning the country's leading industry will be in a form most easily and quickly digested.

EDITORIAL

Boosting Service

MAINTENANCE is just beginning to get the attention it deserves. Every year service methods are being improved and demand for wider use of time and labor-saving equipment is growing.

In view of this fact, the combined shop equipment exhibit by eight Automotive Equipment Association jobbers at the recent Philadelphia automobile show deserves more than passing notice. The shop equipment exhibit occupied 5,000 square feet of floor space in a separate room adjoining the main floor of the motor car show In the exhibit the merchandise was grouped according to manufacturers, each maker being represented by one piece of equipment in his line. Large signs in each booth announced the name of participating jobbers who handled each line. Manufacturers had a part in the exhibit only to the extent of providing a field man to demonstrate the equipment at each booth.

If the experiment by the Philadelphia jobbers proves successful, and there is every indication that it has, similar exhibits at other shows may be expected in another year. Such exhibits should be of considerable value in advancing the cause of better service and maintenance.

Progress in Science

IN an exchange we read that "there has been more progress in science and invention in the last twenty-five years than there was in the preceding twenty-five thousand." If this is true it is certainly very flattering to us of the present generation. But is it?

As far as science is concerned, we have, of course, penetrated further into the mysteries of nature during the last quarter century than was ever done before, but in doing so we were building upon knowledge piled up in previous centuries. In forming rational opinion on the subject it might help to write down in one column the names of all the illustrious scientists from Aristotle and Archimedes down to the giants of the past century—Faraday, Maxwell, Kelvin, Henry, Gay Lussac, Ampere, Pasteur, Gaus, Bunsen and Helmholtz, to mention only a few—and in a parallel column the names of the scientists who have come into prominence since 1900, both with their achievements, and then judge whether the last column balances the first.

In regard to invention the same applies. It is true that more patents have been issued by our Patent Office since 1900 than were issued previous to that year, but it is well to remember in the interests of proper perspective that necessity, the mother of invention, was active long before the Patent Office was established and invention preceded the patent system by many centuries.

Fuel Economy and Car Sales

RECENTLY there has been some criticism of automotive engineers in our columns and elsewhere, based on the fact that after more than twenty-five years of development the average thermal efficiency of the internal combustion engine in a car is only about 5 per cent. This criticism would be valid if thermal efficiency—or, what amounts to the same thing, gasoline mileage—was the one thing every purchaser of an automobile cared for above everything else. But every one knows that this factor has very little influence with the average buyer. Occasionally, when there is a spurt in fuel prices, salesmen will talk gasoline mileage for a short while, but under ordinary conditions it is about the last thing the prospect asks about and the feature least emphasized by the salesman.

Automobile engineers must design cars that meet the public demand, for if they do not they are soon out of the running. That thermal efficiencies are no higher is due to the fact that the public values other conflicting or antagonistic qualities more than high fuel economy, and it is not in any sense a reflection on the competence of our engineers. It is interesting in this connection to read what F. W. Lanchester, one of the pioneer automobile engineers of England, and whose scientific attainments are well known, said on the subject in discussing before the Institution of Automobile Engineers a paper in which a similar charge had been made against the earlier automobile designers:

"The early Lanchester motors were designed to be highly efficient from the thermo-dynamic standpoint, the system of cut-out governing being used to secure its well-known economic advantage. That the problem of economic running had been technically solved I can certainly claim, in view of the petrol-per-ton-mile performance of the 10 and 16 hp. Lanchester as shown by the consumption tests of the period, notably several of the runs made by C. W. Dixon, which have scarcely been excelled, even at the present day. In spite of this, the economy was not worth anything as a selling point, and of practically no interest except to a certain few who had petrol consumption 'on the brain.'

"Thus, in the light of experience it is clear that he who paid attention to thermo-dynamic principles was wrong, and those who subordinated thermo-dynamics and petrol economy to the more vital conditions of simplicity, reliability and uniformity of torque, were right. * * *"

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Thursday, February 11, 1926

Record January Output Likely to be Exceeded in February

PHILADELPHIA, Feb. 11—The record January output of 333,727 cars and trucks will be exceeded this month, despite the lower number of working days, if present schedules are maintained. A number of the largest producers are straining their facilities to the utmost to get cars into the hands of distributors and dealers. So far the industry has maintained the course predicted for it several weeks ago, and the rapid rate of production and sales anticipated for the early months has been established.

The automobile shows now being held in the large cities and in some of the smaller centers have been unusually successful, and this is the main reason why dealers' stocks have not been increasing as rapidly as the heavy production schedules might appear to indicate. The weakest points on the sales map, it is interesting to note, are in the main those in which the annual shows have not yet been held.

Tire Cuts Aid Car Makers

The reduction in tire prices not only will help the automobile manufacturers maintain satisfactory profits and prices, but it should bring the public back into the market for tires and thus relieve the dealers of some of their surplus stocks.

Taken by and large, the only immediate source of disturbance in automotive sales is the used car situation. This is rather worse than usual, because there undoubtedly has been considerably forcing of the new car market during the last two or three months, and new cars have been sold at the expense of the second hand vehicles.

The current agitation about time sales, and especially the advertising of favorable instalment plans, has had the effect of bringing the possibility of buying on time forcibly to the public attention. As a result time sales have been on the increase, and experience has shown that the instalment buyer is more likely to invest in a new car than an old one.

Smith Leaves Ford

DETROIT, Feb. 8—William H. Smith, engineering counsel for the Ford Motor Co., and for many years prominently identified with the organization in various capacities, has resigned. He will engage privately as engineering counsel to general industrial interests.

J. A. Nichols, Jr., Resigns

DETROIT, Feb. 8—J. A. Nichols, Jr., has resigned as vice-president in charge of sales of Dodge Bros., Inc. Mr. Nichols joined Dodge in 1914 and has been with the company ever since. He intends to take a vacation before announcing his future plans.

Auto-Lite Co. Buys Gray & Davis, Inc.

Subject to Stockholders' O. K., Plant Will be Moved to Toledo

SPRINGFIELD, MASS., Feb. 9—A deal in which the Electric Auto-Lite Co. will purchase the starting and lighting business of the Gray & Davis division of the American Bosch Magneto Corp., has been approved unanimously by the directors of the latter company, and is now subject to stockholders' approval at a meeting to be held Apr. 1.

Arthur T. Murray, president of the American Bosch Magneto Corp., stated that the decision had been arrived at after it was realized that the location of the New England company placed it at a distinct permanent competitive disadvantage with Western companies. Continuing, Mr. Murray said:

To Realize Full Book Value

The Electric Auto-Lite Co. offer, which will realize full book value for all tools, dies, inventories, etc., used by the American Bosch Magneto Corp. in the starting and lighting systems manufactured, will enable the latter to concentrate upon the manufacture of automobile accessories, which have been steadily growing in volume, and for which the Springfield plant was originally designed. On these general sales the company can run its Springfield plant at capacity.

Gray & Davis, Inc., will be liquidated, and the $800,000 7s at the moment outstanding will be retired. The company has already bought in $200,000 of this issue.

American Bosch will emerge with a working capital increased by $1,250,000, to $4,000,000, and with a total worth of well over $9,000,000. Earnings last year were $443,000 from magnetos and $403,000 from general sales, but it lost money in the starting-lighting business. The corporation has no bonds or preferred stock, the property belonging entirely to the common stockholders.

The Poughkeepsie plant, abandoned by the Auto-Lite Company some weeks ago, when the De Jon business of the company was transferred to Toledo and Fostoria, was sold today to the Thompson Radio Corp. for $225,000. The plant has a site of 30 acres, with brick and concrete structures giving 72,300 sq. ft. of floor space.

Plans for the enlargement of the Auto-Lite plant in Toledo are going forward rapidly.

FORD CLOSED CARS REDUCED $20 TO $95

DETROIT, Feb. 11—A reduction in closed car prices, effective today, was announced by the Ford Motor Co. as follows:

	New	Old	Reduction
Tudor	$520	$580	$60
Coupe	500	520	20
Fordor	565	660	95

At the same time advances were made in the open models as follows:

	New	Old	Increase
*Touring	$310	$290	$20
*Runabout ..	290	260	30

*Starter and demountable rims $85 extra.

The reductions place the Ford company in a better competitive situation as to the closed models. The cuts made by other manufacturers of low-priced closed cars during the last 12 months have resulted in more direct competition than Ford ever before experienced.

Separate Outlets Planned for Yellow Knight Trucks

CHICAGO, Feb. 10—A sales organization separate from the GMC division will be created to market the new T-2 Yellow Knight 1-ton truck, it was announced today by the Yellow Manufacturing Sales Corp.

According to P. P. Emerson, president, this is a departure from the original plan to distribute the vehicle through the GMC truck sales organization and was necessitated because of the coincidental placing on the market of the new line of "Big Brute" trucks, announcement of which was made Feb. 9.

It is not the intention of the Yellow management to ignore the existing GMC branch distributor and dealer organization, but to secure additional retail outlets wherever this may be deemed advisable. The Yellow Manufacturing Sales Corp. will use as a base of operations the 33 GMC factory-owned branches throughout the country where separate wholesale and retail staffs will handle the marketing of the T-2 Yellow Knight truck.

Production plans have been completed which will enable the building of 1,000 Yellow Knight trucks a month.

Hudson-Essex Has New Price Policy

Abandons F. O. B. Detroit Plan —Prices to be Quoted Will be Delivered Cost

DETROIT, Feb. 8—A sweeping change in sales policy has been announced by all Hudson-Essex distributors. Under this new plan, the system of pricing motor cars F.O.B. Detroit has been abandoned and prices quoted and advertised in each territory will be the prices at which cars are actually delivered to buyers in that territory and which include war tax, freight and equipment.

The value of the equipment is approximately $55 and was formerly bought by the consumer as extras. Instead of adding freight, war tax and other miscellaneous charges to the list price to obtain the final retail selling price, dealers and distributors will quote only the actual delivered price. To do this it has been desirable to establish sales zones with each zone having a set delivered price which will apply to all dealers in that zone. The number of zones has not yet been worked out but will follow railroad zones as closely as possible.

One Price Reports Untrue

Reports which have been current that there was a possibility of the factory making one price throughout the company are absolutely untrue.

Under the new system an Essex coach in Detroit will be delivered for $860, $13 more than the old delivered price of $847. The Hudson brougham will be delivered for $1540, or $16 less than the old price. The Hudson coach is $19 higher and the Hudson sedan $43 less. In the Boston zone the delivered prices of the Essex and Hudson coaches will be the same as before,

(Continued on page 243)

$115,980,199 Net for G. M. in 1925

NEW YORK, Feb. 11—General Motors net earnings for 1925 were $115,980,099. After deductions for preferred dividends, requiring $7,639,991, there remains $108,340,108, equivalent to $20.99 per share on the common. This includes $9,509,722 as the corporation's proportion of the earnings of subsidiary operations in excess of dividends received.

Directors today declared a regular quarterly dividend of $1.75 per share, on the common payable Mar. 12 to stockholders of record of Feb. 22. This increases the regular disbursement on the common from $6 to $7 per share per annum. Regular dividends on preferred and debenture shares, payable May 1 to stockholders of record of Apr. 5 were also declared.

Alfred P. Sloan, Jr., president, said that all divisions of the corporation were enjoying most excellent business. At the close of 1925, cash on hand and in bank, including marketable securities, amounted to $145,142,087.

Car Tax Out of Bill but May be Replaced

WASHINGTON, Feb. 11—Receiving unexpected aid from 16 Republicans and progressives, the Democratic wrecking crew in the Senate last night forced the complete repeal of all automotive taxes. The shift in the tax program, as affecting the automobile industry, was as dramatic as it was swift.

The probabilities are that the bill, with the entire tax on automobiles and accessories removed, will be sent to conference the last of this week, and probably reported out by Feb. 20, and enacted into law by March 1. As the situation now stands, the industry is assured of complete repeal of all taxes on accessories, trucks and a 2 per cent repeal on passenger cars. Under the procedure rules the conferees cannot add anything to the provisions of the measure which were adopted by both the House and Senate.

As the items mentioned have been approved by both the House and Senate the only item that can be attacked in conference will be the passenger car tax elimination. The probability is that the 3 per cent levy will be restored.

White Co. Declares 20% Stock Dividend

CLEVELAND, Feb. 11—Directors of the White Motor Co. have authorized a 20 per cent stock dividend, and the offering of new stock at $50 a share, subject to the approval of stockholders, according to an official announcement yesterday.

The board of directors has called a special meeting to be held in Cleveland, Feb. 27, to vote on a proposed increase in the authorized capital stock from $25,000,000 to $50,000,000, all common stock, the company having no preferred stock or bonds outstanding. The increase will be used for expansion purposes.

According to the announcement, $5,000,000 of the increased stock will be issued as a 20 per cent stock dividend, payable to holders of record of Mar. 10. An additional $10,000,000 of the increased stock will be offered to stockholders at $50 a share, on the basis of two-fifths of a share of the new stock for each share held. The balance of $10,000,000 will be held in the company's treasury for future requirements.

McConkey Bendix Executive

SOUTH BEND, Feb. 11—Vincent Bendix, president of the Bendix Brake Co., announces the appointment of M. W. McConkey as vice-president.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

NEW YORK, Feb. 11—Although a moderate slackening of trade in some lines, notably retail, was reported last week, business in general continued at high levels. Commodity prices were firm, while stock quotations moved upward. The initial report on loans by members of the New York Stock Exchange showed a total of $3,513,174,154 outstanding at the end of January. This figure is considerably higher than was indicated by the majority of estimates.

PIG IRON PRODUCTION

Pig iron production last month amounted to 3,316,201 tons, representing an average of 106,974 tons a day. This compares with 104,853 tons in December, and 108,720 in January last year.

RAILROAD EARNINGS

A new high record was established for railway net operating revenue in 1925. Earnings of Class 1 roads amounted to $1,136,973,477, as compared with $986,744,996 in 1924. This total represents a return of 4.83 per cent on property investment, as against 4.33 per cent a year earlier.

WOOLWORTH SALES

Sales of the F. W. Woolworth Co. last month reached a total of $15,167,768, showing an increase of 6.81 per cent over the figure for January, 1925.

BANK CLEARINGS

Bank clearings in leading cities last month were less than 1 per cent below the December record, and were 3.2 per cent above the total of a year earlier.

BUSINESS FAILURES

Business failures reported to Bradstreet's for the week ended Feb. 4 numbered 431, which compares with 428 a week earlier, and 48 a year ago.

BUSINESS INDICES

Fisher's index of wholesale commodity prices stood at 159.6 last week, as against 159.7 in the preceding week, and 159.3 four weeks earlier. Dun's index declined 1⅛ per cent and Bradstreet's 2⅛ per cent in January.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve Banks increased $30,700,000 during the week ended Feb. 3, with gains of $39,200,000 in discounts, and $6,800,000 in open market purchases, and a decline of $15,300,000 in government securities. Note circulation decreased $4,700,000, and reserves $13,900,000, while deposits increased $10,300,000. The reserve ratio declined from 75.0 to 74.5 per cent.

MONEY

Both call and time loan rates were slightly higher last week, the former at 4 to 5½ per cent, as against 4 to 5 per cent a week earlier; the latter at 4½ to 4¾ per cent, as against 4½ to 4⅝ per cent in the preceding week. Commercial paper rates were unchanged at 4 to 4½ per cent.

Automobile Sheets Now at 4.50c Level

Slowness of Automotive Orders Continues—Leading Independent's $7 Dividend

NEW YORK, Feb. 11—Finishers of automobile sheets declare that instances in which the 4.50c base price, as reported in the last few days, has been shaded had to do with material that is not fully finished. They say that they have no difficulty in booking orders at that price level from passenger motor car manufacturers who insist upon receiving full-finished sheets of uniform quality when they order full-finished sheets.

It is true that some consumers are more exacting than others, and would reject as prime body stock what another might accept. There is, however, no doubt that the sheet market, as a whole, has eased off. Black sheets are far more frequently the object of sales at 3.25c, even in light tonnages, than at 3.35c which level is continued as the outside of the quoted range, but has become strictly nominal.

Sheet Bars Easy

Sheet bars, unobtainable at $36 a few weeks ago, are now easy, if not weak, at that level. In spite of the continuing wailing anent the slowness with which automotive orders are placed, producers of sheets, strip-steel and alloy steels are making good-sized shipments Detroitward. The tapering off in operations of sheet mills is not, as claimed, so much due to tardy specifications from automotive consumers as from a decline in the demand from other industries.

Bolts and nuts have been bought in liberal tonnages by passenger motor car makers.

In view of the frequent complaints made last year concerning the inadequacy of full-finished automobile sheet prices, the trade was pleasantly disappointed by announcement that the leading independent roller of full-finished sheets declared a dividend of more than $7 on its common stock—just about double its 1924 dividend payments. Its bond interest was earned 20 times and its dividend on preferred more than 9 times. It is becoming more and more obvious that the millions of dollars which leading steel producers have expended on plant improvements in the last few years are beginning to pay rich returns in lessened production costs.

The Metal Markets

Pig Iron—Automotive foundries are buying sparingly. There is an impression abroad that any change in the pig iron market will be in a downward direction. A few blast furnaces have banked their fires so as to be able to dispose of their coke at the fancy prices which that commodity commands just now in New York and Philadelphia.

Aluminum—Reports are current that the sole domestic producer plans further extension of his foreign production facilities by obtaining advantageous, low-cost water-power sites in Spain for the economic reduction of metal from bauxite. Neither confirmation nor denial of these rumors has come so far from the officials in charge of such expansion. The domestic market remains firm and unchanged. German, Norwegian and Swiss shipments arrive in routine tonnages which for the most part have been previously contracted for by consumers.

Copper—Loudly acclaimed as was the fractional advance of the market a few days ago, there is so far no sign of the much talked of copper boom. Automotive brasses, recently slightly lowered as the result of easier zinc market conditions, remain unchanged.

Tin—The market has recovered lost ground.

DODGE ENJOYS BEST JANUARY IN HISTORY

DETROIT, Feb. 8—January was the best January in the history of Dodge Bros., Inc., it was stated at the factory today. Retail sales of new cars by United States dealers for the four weeks ended Jan. 30 amounted to 19,218 cars, a gain of 58 per cent over the same period in 1925. New car deliveries totaled 14,943 cars, a gain of 67 per cent over the corresponding period last year.

Factory shipments of cars and Graham Bros. trucks amounted to 22,135, as compared with 15,683 in January a year or so. Of the total factory shipments 19,520 last month, and 12,929 in Jan., 1925, were for distribution in the United States. The largest previous month's shipments in the history of the company was April, 1925, when 26,930 cars were shipped.

Factory officials hope to get into production of 1500 cars daily by the end of February, an output schedule that was announced some time ago and one which will tax the capacity of the enlarged plants here.

Automotive Electric Associations Joined

CHICAGO, Feb. 10—Unanimous approval of a proposal to affiliate with the Automotive Electric Association was given by members of the Automotive Electric Service Association at a meeting held here during the National Automobile Show. The vote was taken at the first session of a two-day conference held at the Congress Hotel after President R. R. Thomas had presented the plan, which had been worked out by joint conferences of the A. E. A. with the A. E. S. A. Board of Governors.

$143,430,708 Taxes Paid by Motorists

1925 Figure Shows Gain Over Previous Year of $4,228,953

WASHINGTON, Feb. 11—American motor vehicle owners, during 1925, paid a total of $143,430,708 in taxes into the Federal treasury as compared with a total of $139,201,755 paid during 1924, it was announced here this week by the Internal Revenue Bureau.

It is shown that collections from "automobile trucks and wagons" fell off in 1925 when receipts were $8,359,299.53 as compared with $10,335,369.14 in 1924 as well as from "tires, parts or accessories" which dropped from $27,742,764.12 in 1924 to $23,086,580.22 in 1925 but these losses were more than made up in the gain on "other automobiles and motorcycles" which jumped from $101,123,621.75 in 1924 to $111,984,828.80 in 1925.

Michigan, as usual, was the outstanding state in the collections with a total of $83,286,678.82 as compared with $77,996,105.51 in 1924, but in 1925 Indiana displaced Ohio for second place with $8,371,852.01 as compared with $6,662,665.61 in 1924, while Ohio's 1925 total was $7,848,799.36 as compared with $7,801,076.76 in 1924.

Budd Wheel Co.'s Sales Amount to $9,784,307

PHILADELPHIA, Feb. 10—Budd Wheel Co.'s sales in 1925 totalled $9,784,307, as compared with $7,014,987 in 1924. Estimated earnings, after interest, amortization and depreciation, for 1925, were $1,185,000. This is more than five times the aggregate annual charges of approximately $220,000 for interest and sinking fund on the first mortgage bonds, including those of the Budd Realty Co., and dividends of $8 per share per annum on the latter's capital stock.

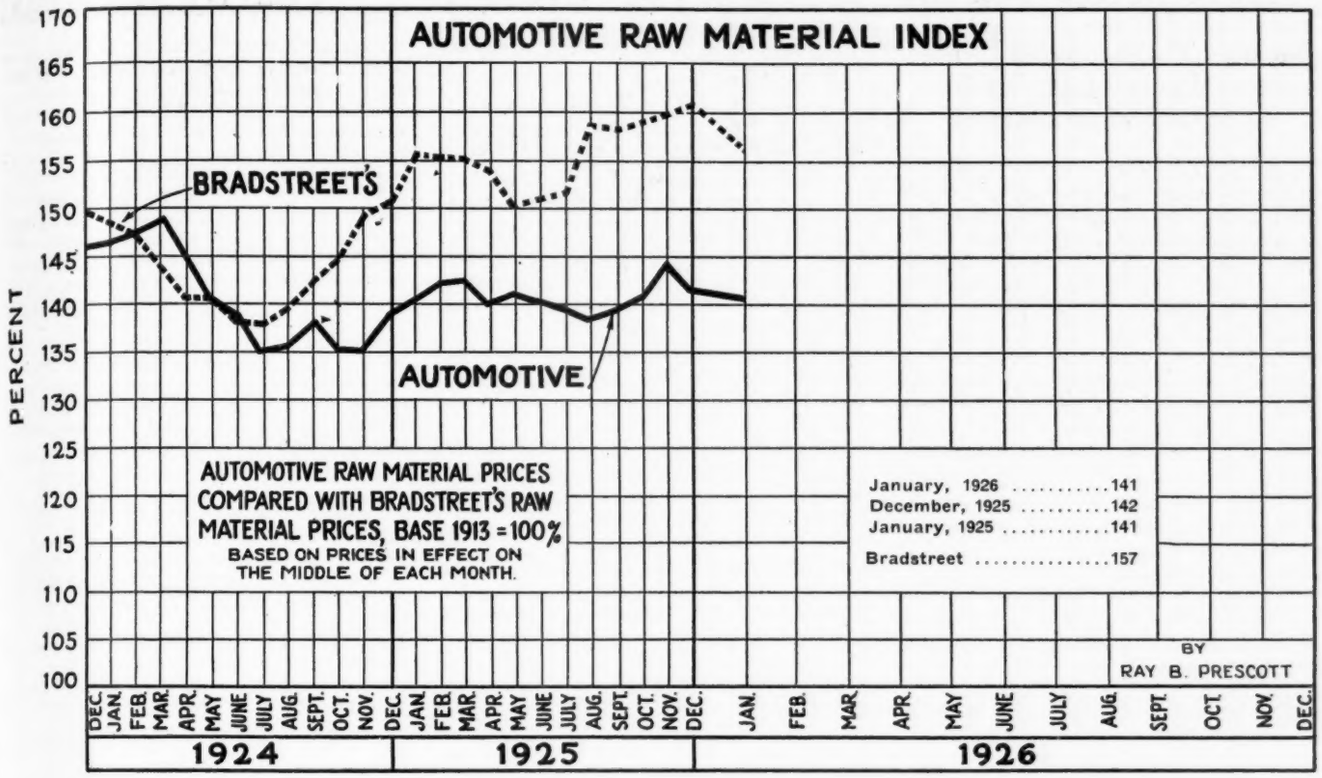
The Budd tentative balance sheet, as of Dec. 31, 1925, showed total net assets of $4,168,511, exclusive of patents and other intangible assets.

Bliss Co. Files Charter, Increases Capital Stock

NEW YORK, Feb. 10—E. W. Bliss Co., Brooklyn manufacturer of heavy stamping machines for steel parts, frames and other automotive purposes, has filed a Delaware charter, under which the capital stock of the company is increased from 300,000 shares of no par common to 400,000 shares. Of the additional stock thus authorized, the company will hold 40,000 shares in the treasury.

This concern, which is about 75 years old, formerly operated under a West Virginia charter and made the change chiefly to obtain better taxation conditions.

January Raw Material Index Shows Decrease



Hardwood Output Low; Prices High

ATLANTA, Feb. 8—Hardwood sales in the principal southern markets during January to the automobile and body trades established one of the largest records for this month in the history of the business in the South, according to manufacturers in Atlanta.

Production is at a comparatively low ebb, due to inclement weather; hence, most orders have been for delivery later in the first quarter of the year, probably in March. Some of the shipments cannot go out until the early part of the second quarter, as it will take mills this long to catch up in production. Stocks in the mill yards now are exceptionally low, and the result is that prices are noting a strong upward tendency.

Primary demand is for thicker dimensions of ash, though there is also a fair demand for maple and elm. Best grade of white ash, known as first and second, is $125 to $130 for 10 and 12 x 4-in. sizes, and $155 to $160 for 16 x 4-in. No. 1 common and select, the next best grade, is selling $100 to $105 for 10 and 12 x 4-in. and $100 average for 16 x 4.

Plate Glass 1925 Output is 117,224,296 Sq. Ft.

WASHINGTON, Feb. 11—The rise in favor of the closed automobile, all models of which are glazed with plate glass is cited as one of the principal reasons for the output of plate glass in the United States during 1925. This reached 117,224,296 sq. ft., exceeding all estimates by more than 2,000,000 sq. ft., and ahead of the production of the best previous year by 25,669,821 sq. ft.

Figures on the subject just made public by P. A. Hughes, secretary of the Plate Glass Manufacturers of America show that in 1921 the production was but 53,578,682 sq. ft., or approximately one-third of the present output. Approximately 53 per cent of the total plate glass output is used in the automobile industry.

25,452 Chevrolets Sold in January

CHICAGO, Feb. 8—A total of 25,452 cars were sold by the dealers of the Chevrolet Motor Co. from January 1 to 30, R. H. Grant, vice-president and general sales manager, told the dealers and associate dealers of the Great Lakes region at a meeting held here last week. The best previous January in the history of the company was one in which 11,800 cars were sold, Mr. Grant said.

The session was the second annual business meeting of the dealers and associate dealers of the district.

Mr. Grant cautioned dealers against selling "side-line" articles, and told them to sell one thing, the Chevrolet, and sell it more intensively. To this end he promised that the company would back up the dealers with a large volume of advertising, direct mail canvassing and more intensive sales cooperation.

Franklin Earnings $32.48 Per Share

SYRACUSE, N. Y., Feb. 10.—The H. H. Franklin Mfg. Co. reports, for the year ended Dec. 31, 1925, net income of $2,019,170, as compared with a deficit of $811,434 for 1924.

Earnings for 1925 were $32.48 a share on the preferred and $5.29 on the common, before the preferred stock sinking fund, this being based on 62,163 shares of the preferred and 299,424 shares of the common outstanding in 1924. There were 64,915 preferred in 1924.

Net working capital, based on current assets and liabilities, was reported as $5,875,608, compared with $4,475,339 in 1924.

On Dec. 31, 1925, net tangible assets, applicable to the 299,424 shares no par common, amounted to $6,628,220, or $22.14 a share.

Ethyl Gasoline Corp. to Resume Operations

NEW YORK, Feb. 10—The Ethyl Gasoline Corp. plans to resume the sale of ethylized gasoline as soon as regulations covering the ethylization process can be worked out in co-operation with the Surgeon General of the United States, whose special committee recently reported that, under proper safeguards, this product was not a menace to public health.

The company virtually suspended operations pending the investigations by the committee.

Employment High in Automotive Centers

Detroit Gains 57,000 Over Same Period Last Year—Toledo Shows Increase

DETROIT, Feb. 8—Upwards of 263,842 persons were employed in factories in the Detroit area for the week ended Feb. 6, according to the Employers Association of Detroit. This above figure is an increase of 2240 over the preceding week, and an increase of nearly 57,000 over the same week of last year.

Workers in automobile factories and accessory plants number approximately 217,000, a good-sized increase over the same period of last year.

Employment in Toledo automotive plants is within 16 per cent of the peak for 1925, according to the report of 51 plants today showing 25,318 workers on payrolls, as compared with 22,056 at this same time last year.

The net gain for the week ended Feb. 6, was 985 workers and the gain the previous week was 415. Employment has been steadily increasing since the beginning of the year.

Most plants are beginning to work on spring schedules and are planning for larger production than at the corresponding period last year.

Radio Growth Helpful to Battery Manufacturers

CHICAGO, Feb. 10—The mushroom-like growth of the radio business and the opportunity which it presents for those in the battery business and allied lines was pointed out at a meeting of the National Battery Manufacturers Association held in Chicago on Friday of show week.

Ernest Ingold, San Francisco distributor for the Atwater Kent Co., spoke and showed how the business had grown faster than the automobile business, being among the first twelve industries as far as annual sales is concerned.

The market for radio batteries, he predicted, would remain strong, as far as the A battery is concerned, with possible dropping off in B battery sales, due to increased use of B battery eliminators, which improve on the B battery in appearance and require less attention, although constituting no improvement in operation.

Crucible Steel Casting Moves, Doubling Capacity

MILWAUKEE, Feb. 11—There will be no interruption in production when the Crucible Steel Casting Co. of this city, manufacturer of electric steel castings for the automobile industry, moves from its present foundry at 612 Clinton Street to its new plant in the town of Lake.

A. C. Lange, president of the company, announces that it has orders for six months ahead and is running at capacity at present. The new plant will be equipped with two electric furnaces, and will double the capacity of the present plant. The transfer from one plant to another will be made in May, according to present plans.

Ford Denies Rumors of Steel Mergers

DETROIT, Feb. 8—Edsel B. Ford has emphatically denied published reports that the Ford interests are planning a gigantic independent steel merger. Reports which have been published credit the Ford Motor Co. with the purchase of the American Rolling Mills, Youngstown Sheet & Tube Co., and the Trumbull Steel Co., all of Ohio.

"There is no truth in this statement," said Mr. Ford "that we have ever thought of such a merger and I have no idea where such a rumor started."

The merger, if consummated would have involved approximately $250,000,000 and would have made the amalgamation of the three plants the largest steel mill in the world.

Dodge Bros. Reduce Prices in Britain

LONDON, Jan. 31 *(by mail)*—The price reductions forecast in England after Christmas as applying to Dodge Bros. cars have just been announced. They are as follows:

	New	Old
Touring car (English body)	£335	£355
Sedan	£360	£395
English landaulet	£470	£485
English saloon landaulet	£535	£550

Crescent Tool Co. Buys Smith & Hemenway, Inc.

JAMESTOWN, N. Y., Feb. 10—The Crescent Tool Co. has purchased Smith & Hemenway Co., Inc., Irvington, N. J.

Ill health of Landon P. Smith, president of Smith & Hemenway Co., Inc., is largely responsible for his selling out.

The executive offices of the company will be moved to Jamestown.

The glaziers' tool business of Smith & Hemenway Co., Inc., has been transferred to L. P. Smith, Inc., Irvington, N. J., but the balance of the "Red Devil" tool line will be manufactured and sold by Smith & Hemenway as heretofore.

Stutz Chicago Sales Reach Total of 236

INDIANAPOLIS, Feb. 8—"If any doubt existed as to the acceptance of the new Stutz safety chassis by the automotive public, Chicago's record of sales performance would dismiss it instantly." So said F. E. Moskovics, president of the Stutz Motor Car Co. in the closing hour of Chicago's National Automobile Show.

Chicago's sales records totalled 236 cars, representing a consumer list of $778,800.

Financial Notes

Intercontinental Rubber Co. of New Jersey—This company has been dissolved as of Jan. 30, and the authorized shares of Intercontinental Products Corp. of Delaware have been increased from 60,400 to 604,000 no par. For each share of the former company's common outstanding Jan. 30, the holder has three options to receive cash and securities in the Delaware concern: He may have 1.08 shares of capital stock and 70 cents cash; one share capital stock and $1.50 cash; one share capital stock and 70 cents cash, with transferrable optional warrant to receive .08 of a share of capital stock, or, at the option of the warrant holder before April 1, 80 cents cash in lieu thereof. Unless stockholders notify the company otherwise, it will be assumed that the first option is desired. Application to list Intercontinental Rubber Products Corp. shares on the New York Stock Exchange has been made.

Caterpillar Tractor Co.—This company has declared a stock dividend of 25 per cent, in addition to the regular quarterly dividend of $1.25 a share in cash. The stock dividend will be payable as soon as possible after the Corporation Commission of California assents. The cash dividend is payable Feb. 25 to holders of record of Feb. 15.

President Force said that the 1925 gross was approximately $20,800,000, and net, before depreciation and taxes, was $4,400,000. The company has $1,400,000 cash and liabilities of $600,000.

Auburn Automobile Co.—This company reports for 1925 net income of $755,685, equal, after preferred dividends, to $12.42 on 1,500,000 common of $25 par value. This compares with net loss of $37,951 in 1924. Sales gained from $3,469,472 in 1924 to $7,746,906 in 1925. Total assets as of December 31 were $3,829,987, and surplus was $1,008,391.

Black & Decker Mfg. Co.—The issue of this company's $428,200 8 per cent cumulative preferred stock, the books for which were closed Jan. 30, was over-subscribed by more than $100,000, the company has just announced. The stock was offered to stockholders, employees and friends of employees only.

Studebaker Corp. of America, Inc.—This company has declared a regular quarterly dividend of $1.25 on common and $1.75 on preferred, payable Mar. 1 to stock recorded Feb. 10. In the previous quarter the corporation paid $1.00 extra on common, and increased the quarterly rate from $1.00 to $1.25.

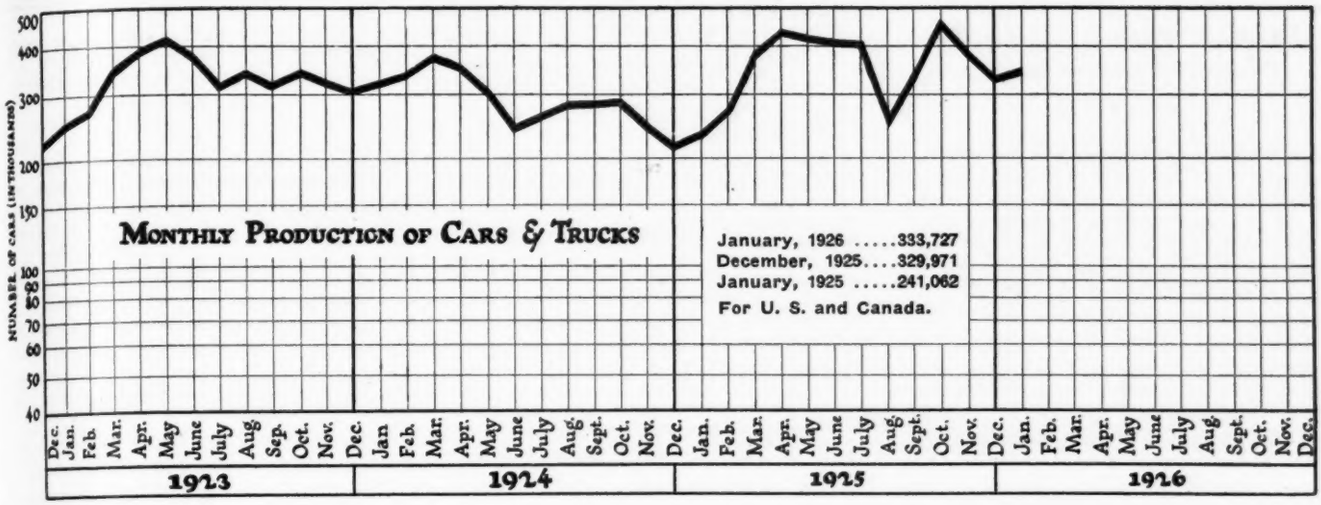
Mullins Body Corp—This company for 1925 reports net profit of $286,692, equal, after dividends, to $2.09 on the common, and comparing with $299,715 or $2.22 in 1924.

Chandler-Cleveland Motor Corp.—This company has applied to the New York Stock Exchange to list 350,000 shares of no par preference, and 630,000 shares of no par common stock.

Autosales Corp.—This company for 1925 reports net income of $97,520, equal to $1.61 on the preferred, and comparing with $62,092 or $1.07, in 1924.

Willys-Overland Co.—The time for exchanging the warrants of this company for common stock has been extended to Feb. 20.

January Production Sets Record for Month



Rubber Companies Report Good 1925

Goodyear, General, Mohawk, and Lee Enjoyed Largely Increased Sales

AKRON, Feb. 11—Many tire manufacturers have already noticed an increase in sales to dealers as a result of the cut in prices, effective Feb. 1, accompanied by announcements of protection to dealers until July 1 against further possible downward revisions.

The Goodyear Tire & Rubber Co. broke all previous records for both volume of business and profits in 1925. Net sales for the Akron, Los Angeles and Canadian companies and foreign branches totaled $205,999,829, compared with $138,777,718 in 1924. Net sales, exclusive of the subsidiaries and branches, were $169,470,112 in 1925, against $115,325,175 in 1924.

After Federal taxes, but before interest and other charges, net earnings were $26,284,672, compared with $17,363,162 in 1924. Net profit for 1925 was $21,005,898, after deducting interest and other charges, against $12,161,540 in 1924. Before allowing for the special raw material reserve of $7,500,000, this was equivalent to nearly $18 a share on the common. The 1925 surplus, after allowing for dividends of $5,655,156, is $30,649,319, compared with $22,798,576 in 1924.

Net earnings of General Tire & Rubber for the year ended Nov. 30, 1925, are reported as $1,843,299, equivalent to $44 a share on the common. Gross business in 1925 totaled $18,700,000, compared with $13,152,000 in 1924. Profits were $1,500,000.

The Mohawk Rubber Co. reports sales of $5,182,788 for 1925, compared with $3,413,731 in 1924. Profits in 1925 were $580,000, against $343,656 in 1924. Deferred dividends amounting to $68,223 and taxes for 1917, 1918 and 1919, totaling $191,011.65 were paid during the year.

The preliminary report of the Lee Rubber & Tire Co. sets net profit at $302,000, compared with a net loss of $234,472 in 1924. This is equivalent to $1.41 a share on the 214,000 shares of capital stock outstanding.

LITLE RESIGNS AS LINCOLN ENGINEER

DETROIT, Feb. 10—Thomas J. Litle, Jr., has severed his connection as chief engineer of the Lincoln Division of the Ford Motor Co.

Mr. Litle is one of the best-known engineers in the automobile industry, both for his contributions to original design and research and for his frequent addresses and writings on automotive engineering subjects. He is president of the Society of Automotive Engineers for 1926.

After a period of active interest in gas lighting, he joined, in 1917, the engineering department of the Cadillac Motor Car Co., later becoming research and experimental engineer. He joined the Lincoln Motor Co. in the same capacity in 1918, subsequently being advanced to the position of chief engineer, which he held until recently. Mr. Litle has been an exponent of the desirability of establishing a fundamentally sound design and augmenting it with refinements that would be completely interchangeable with the old parts.

He has not formulated plans for the future other than to announce himself as engineering and production consultant at 733 Seyburn Ave., Detroit.

New Sales Policy for Dodge Dealers

Delivered Prices to Include Predetermined Handling Charges

DETROIT, Feb. 10—Delivered prices quoted by Dodge Bros., Inc., dealers in the future will cover the exact list price plus actual freight and tax, and a predetermined handling charge, as a result of a change in factory billing methods. Hereafter dealers will be billed against the bill of lading with the net cost of the car, the actual freight which will be prepaid at the factory, and the tax. This leaves only the handling charge to be added by the dealer.

Oakland to Increase Working Force to 2700

PONTIAC, MICH., Feb. 10—Oakland is making plans to increase the force of its workmen from 2000 to approximately 2700 within the next month. This is being done to take care of the contemplated increase in production of both the Oakland and Pontiac lines.

A. J. Brandt, works manager, said that the removal of the body-building activities to the Fisher Body Corp. plant a few blocks distant had given the Oakland plant much more space.

Sides is Export Manager

DETROIT, Feb. 11—Fred B. Sides has been appointed export manager of the Hupp Motor Car Corp. to succeed J. H. Teagan, resigned. Mr. Sides will act under R. S. Cole, director of exports. The new export manager had been assistant sales manager since 1919, being succeeded in that position by James I. Phillips, who has been with the Hupp organization since 1915 in charge of stores.

Gasoline Mileage Will Be Increased

Kettering, Before Conservation Board, Predicts Saving in Energy

WASHINGTON, Feb. 11—Hearings before the Federal Oil Conservation Board, appointed by the President to find ways and means of conserving the Nation's crude oil supply, opened this week with C. F. Kettering, president, General Motors Research Corp., as the principal witness.

Mr. Kettering laid before the board an outline of the things that have been done toward working out the relationship between gasoline and motors. He pointed out that, while automobile manufacturers have made a great deal of progress, the maximum has not been attained in fuel consumption, and declared that "there is enough energy in a gallon of gasoline, if converted 100 per cent to mechanical power, to propel a Ford 450 miles, compared with an average of about 15 miles today."

May Double Miles Per Gallon

"As to the ultimate which may be expected, it is difficult to predict, but it is reasonable to expect that, with a complete change of engine designs, and with their effects upon the remaining parts of the automobile in the way of reduced weights, the influence of improved road conditions, traffic regulations, etc., it might be possible to reach a condition of doubling the miles per gallon."

Secretary of the Interior Work, testifying before the board, outlined in detail the aims and purposes of the Government in cooperating with the petroleum producers, and stressed the urgent need of the fullest cooperation by the automobile manufacturers.

He pointed out that the Oil Board hopes to determine whether or not there is an inexhaustible supply of petroleum in the United States, and to decide how industry and the Government can conserve the present supply.

Production in the U. S. last year was 750,000,000 barrels of crude oil, he told the committee. Gasoline refined amounted to 10,000,000,000 gallons of which 9,000,000,000 were consumed. There are 6,320 producers of petroleum in the country, of which 70 companies produce two-thirds of the total output and no single company produces as much as 7 per cent of the total, Secretary Work told the board.

S. A. E. June Meeting to be at French Lick

NEW YORK, Feb. 9—French Lick Springs, Ind., has been selected as the place for the semi-annual meeting of the Society of Automotive Engineers, and the dates set are June 1 to 4, inclusive. The location was selected as the result of a canvass of the Society's membership, and an attendance of more than 1000 members and their guests is anticipated.

In cooperation with the American Society of Agricultural Engineers, the Society will hold its annual tractor meeting in Chicago on March 25-26. It is planned to provide a number of special features for the meeting, in addition to the addresses on tractor engineering, production, application and operation.

Other meetings of the year, for which the dates have not yet been set, are an aeronautic meeting and an automotive transportation meeting.

Autocar Co. Offers Reorganization Plan

Proposes 3 Classes of Stock—Gross Business in 1925 Was $18,000,000

NEW YORK, Feb. 10—Proposed reorganization of the Autocar Company of America, plans for which are now being crystallized, will, if they materialize, include the issue of three classes of stock—a preferred issue, and two issues of common, A and B. Class A stock will have preference as to dividend payments and assets. Holders of Class A will have the opportunity to convert their stock into Class B shares on a share-for-share basis at any time.

Stockholders have been requested to deposit their stock in approval of the plan, and negotiations with the bankers are expected to result in the sale of part of the new securities as soon as the present outstanding preferred and common stock has been deposited. It is believed that sale of the securities will realize enough to pay off the funded debt and provide additional working capital to care for the company's increasing volume of business. Gross business last year aggregated $18,000,000, as compared with $3,900,000 in 1915.

Class A stock will not carry voting power.

Gilmer Gets Belt Orders

PHILADELPHIA, Feb. 10—The L. H. Gilmer Co., manufacturer of automobile fan belts, has taken over a large number of unfilled orders for small rubber belts from the United & Globe Rubber Co., Trenton, N. J., which recently failed.

Developments of the Week in Leading Motor Stocks

NEW YORK, Feb. 10—Motor shares are again strong, after a day or two when they were affected by the general market weakness. The automotive securities, held up well under the wave of liquidation, and by no means all the gains registered last week were lost.

Evidence that the motor shares are again receiving particular attention from the speculative element was seen in the rebirth of several ancient rumors regarding mergers, while there was more than the usual amount of talk extra dividends and huge earning.

Although there is no doubt that first quarter reports of many of the manufacturers will show a record income for the period, this does not, of course, mean that the profits will be immediately dispersed in extra dividends. Conservative opinion holds to the view that the directors of the companies will prefer to withhold action of this character until a better idea of the results to be obtained from the entire year's operations can be gained.

So far there has been no warning of any change in the general business and credit situation, and both are strong enough to justify expectations of continued prosperity for the automobile industry. Annual reports now being issued are emphasizing the sound condition of the leading companies.

Rubber shares were steady all week, and showed no sign of being affected to any great extent by the reductions in tire prices. It was recognized that the drop in prices of crude would compensate for the lower sales in dollars that might be expected from the tire price cuts. Kelly-Springfield, hitherto figuring little in stock market activity, was up to around 21, a gain of about 3 points in 10 days.

General Motors declined more than 3 points, without any specific reason, apparently, and it appears to be on the upward trend again, on the publication of reports that earnings for January were at an unusually high rate. The lower-priced car stocks revealed approximately the same tendency. The opinion is firmly held by the speculative community that there will be a movement upward in the motors within the next month or two.

With most of the shares at levels certainly not too high, considering the recent dividend actions of the companies, and with the Street generally "optimistic" on the motor outlook, it is not surprising that strong resistance is shown to selling movements.

A feature of the week was a sharp upturn in Auburn shares on the Chicago Stock Exchange, which carried them Tuesday up 5½ to a high of more than 65. Publication of the annual statement of this company served to call attention to the splendid progress it has been making, while the extent of the current advertising and show display of the Auburn cars is a sign of the aggressive sales policies now being pursued.

The transaction whereby the Gray & Davis Division of the American Bosch Magneto Corp. was acquired by the Electric Auto-Lite Co., apparently was without significance marketwise, the stocks showing only minor fluctuations.

Automotive Trade Big R. R. Customer

3,040,000 Freight Carloads of Industry's Products in 1925 Sets Record

NEW YORK, Feb. 9—Rail shipments of automobile products exceeded all previous records in 1925, according to J. S. Marvin, chairman of the Traffic Managers Conference of the National Automobile Chamber of Commerce, who reports that 3,040,000 freight carloads of automotive products were hauled by the railroads last year. These included gasoline for automobiles, road building material and kindred freight, as well as cars and parts, but did not include many other items, such as building materials and equipment for factories and garages, less than carload shipments of parts and accessories, and express matter.

The importance of this business to railroads is emphasized by comparison with the shipping of other principal commodities in 1925. Coal leads with 8,866,392 carloads, followed by forest products, 3,741,068; grain and grain products, 2,300,199; ore, 2,018,854; live stock, 1,535,252. Shipments of automobiles and parts alone during the year approximated 820,000 carloads compared with 740,578 in 1924.

Fixing of Prices by Makers Favored

NEW YORK, Feb. 8—The Capper-Kelly bill, pending in Congress, which would give manufacturers of trade-marked articles the right to fix prices at which these articles are sold by retailers, is causing considerable discussion in the automotive field. The Chamber of Commerce of the United States has decided not to support the bill, as the result of a referendum in which a majority of its members favored it, but not the two-thirds required by the chamber's rules.

F. B. Caswell, vice-president of the Champion Spark Plug Co., in favoring the bill, says:

"Both distributors and retailers are entitled to their profits, but they cannot get them when some dealers cut prices on articles of National reputation, nor does the public really benefit by these cut prices. At the same time, unbranded and unknown merchandise is sold at higher prices by the same merchants.

"On products such as motor cars, the manufacturer is able to fix the resale price because of the way he distributes, and manufacturers of articles sold through other retail channels should have the same protection.

"It is a well-known fact that the consumer has more protection when he buys trade-marked articles, because he knows what the regular price is. And such articles, especially those well advertised, are constantly reduced in price as the increase of volume lowers production costs.

"Take our own product. Because we make 40,000,000 spark plugs per year, they can be sold at 60 and 75 cents, prices which are impossible without great volume.

"These are fair prices and no consumer would object to paying them, and allowing the dealer to make his fair profit. That is why we are supporting the Capper-Kelly bill, and we hope that all who feel the same way about it will let their Senators and Congressmen know how they stand."

STUDEBAKER EXPORTS SHOW 63% INCREASE

SOUTH BEND, Ind., Feb. 10—With an increase of 63 per cent over 1924, the Studebaker Corp. of America announces a new high record extablished by its 1925 export sales. The 1925 figures represent also an increase of two and a half times over 1922.

Hudson-Essex Has New Price Policy

(Continued from page 237)

while the Hudson brougham and sedan will be $25 and $50 less. In Los Angeles there will be an increase of $10 and $20 on the two coach models and a decrease of $10 and $25 on the Hudson brougham and sedan.

In New York the prices will result in an increase of $7 on the Essex coach and $18 on the Hudson coach, while the Hudson brougham and sedan will be delivered for $15 and $45 less than before.

Advantage to Consumer

One of the chief advantages set forth to the consumer by the new plan is that he will know definitely what his car will cost, as there are no extra handling charges.

Equipment added in the new plan on all Hudson and Essex cars follows:

Front and rear bumpers, electric windshield wiper, rear view mirror, radiator shutters and combination stop and tail light.

Prices in various zones are effective Feb. 15.

Lee Merchandising Manager

SYRACUSE, N. Y., Feb. 11—John W. Lee, Jr., has been appointed merchandising manager of the Franklin Automobile Co. Mr. Lee was at one time president of the Syracuse Automobile Dealers Association, and was formerly president of the Overland-Syracuse Co., and head of the Lee Auto Supply Co.

The merchandising department at the Franklin factory is a new departure in its organization and is part of the program of expansion undertaken by the company.

New Building for G.M. in New York

Will Have 17 Floors at 1775 Broadway in Automobile Row

NEW YORK, Feb. 9—The 33 automobile and accessory firms occupying the three-story Colonnade Building at 1775 Broadway will continue to do business while 22 stories are added. The upper 13 floors have been leased for 21 years, at $700,000 per year, beginning May 1, 1927, by General Motors Corp., and the building will be named "General Motors Building."

Other firms which have taken space include Rolls-Royce of America, Hudson Motor Car Co. of New York, Warren-Nash Motor Co., Rickenbacker Motor Co., American Automobile Association, Metropolitan Automobile Association and Astor Cab Co. General Motors will also occupy the basement.

Fifth Largest in N. Y.

The building will have a street frontage of 739 feet and a total rentable area of about 520,745 sq. ft., and will be the fifth largest building in New York City. The location is in the center of automobile row, directly opposite the buildings of the United States Rubber Co., the Goodrich Tire Co. and the Fisk Rubber Co. Nearby are New York headquarters of the Ford, Reo, Buick, Packard and Cadillac companies.

General Motors will not only establish its eastern executive and clerical headquarters on the new floors but will arrange for private dining rooms, club rooms, barber shop and a board room, seating 40 directors.

Including the basement, General Motors' aggregate rental for the 21 years of its lease exceeds $15,000,000. The company will occupy about eight acres of floor space.

Pierce-Arrow Co.'s Net Income is $1,629,781

BUFFALO, Feb. 10—The Pierce-Arrow Motor Car Co., for the year ended Dec. 31, 1925, reports net income of $1,629,781, after depreciation, interest and Federal taxes, equivalent, after dividends on prior preference stock, to $15.46 a share earned on $10,000,000 8 per cent cumulative preferred stock. Dividends have not been paid since March, 1921.

Allowing only for the regular annual dividend requirements on the preferred, the balance is equal to $2.26 per share on 328,750 no par common shares outstanding after conversion of prior preference stock.

The consolidated income account of the Pierce-Arrow Motor Car Co. and the Pierce-Arrow Truck Sales Corp., shows manufacturing profit of $2,152,078, after providing for depreciation; other income of $91,494; total income, $2,243,572; interest, $393,791; Federal taxes, $220,000; and prior preference dividends, $83,758.

Men of the Industry and What They Are Doing

Graybar Electric Co. Announces Appointments

The new Graybar Electric Co., formerly the supply department of the Western Electric Co., announces several important changes in organization of department staffs.

The new appointees, with their staff designations, are as follows: W. O. Ramsburg, general service manager; G. E. Chase, broadcasting sales manager; A. J. Eaves, carrier telephone sales manager; and R. M. Hatfield, public address sales manager. C. E. Reddig has been appointed appliance engineer, and W. A. Foulty, plant engineer.

Bennett Made President

Hubert D. Bennett, son of the late George W. Bennett, formerly general manager of the Willys-Overland Co., has been elected president of the Toledo Scale Co. This company was organized in 1901 by the late Henry Theobald to manufacture a computing scale operated by means of an automatic pendulum counter balance. The company has expanded since until at present it manufactures thirty models of computing and non-computing scales, some of which are especially prepared for indicating on a dial the horsepower of engines, for balancing reciprocating units, testing springs, measuring gasoline consumption and counting parts.

O. C. Reeves, general factory superintendent since 1905, was elected first vice-president, and W. C. Gookin, general sales manager, second vice-president.

Lineberger With Maccar Co.

Paul N. Lineberger, Brooklyn, N. Y., for several years vice-president and sales manager of Rainer Trucks, Inc., and the Rainer Motor Corp., has disposed of his interests in these concerns and accepted appointment as eastern sales export manager for the Maccar Truck Co. of Scranton, Pa., with headquarters at Fourth Ave. and Warren St., where he will also direct the city sales department.

Herrington Addresses S. A. E.

Arthur W. S. Herrington, chief of the motor transportation division, Q.M.C., U. S. A., was the chief speaker at the last regular meeting of the Milwaukee Society of Automotive Engineers held in Milwaukee. Slow-moving street cars must give way to faster passenger buses, and street cars will become obsolete within the next few years, as far as downtown traffic is concerned, Mr. Herrington asserted.

Edward is Purchasing Agent

Charles Edward has been appointed purchasing agent, Durant Motors of Canada, Ltd., Toronto. Mr. Edward was formerly with the McClary Mfg. Co., Ltd., of London, Ont.

500 CLUB ELECTS MORRIS PRESIDENT

Renewal of old acquaintances, good fellowship and a good time generally marked the annual banquet and frolic of old timers in the industry at the Congress Hotel, Chicago, last week. It was a get-together of members of the "500 Club," formerly known as the "Old Timers Club," whose show-time event is always one of the brilliant social affairs of the Chicago season.

William T. Morris, vice-president and general manager of the American Chain Co., was elected president for the ensuing year. He succeeds Vincent Bendix, head of the Bendix Corp., who automatically takes a position on the board. Other members of the board are: Albert Champion, Champion Spark Plug Co., Edward V. Rickenbacker, Rickenbacker Motor Co., Harry P. Branstetter, Chicago Kissel distributor, Joseph H. McDufee, Prest-O-Lite Company, James Levy, Chicago Buick dealer, Lloyd Maxwell, Williams & Cunningham Advertising Agency, and Sid J. Black, Cleveland Automobile Co. Mr. Branstetter is treasurer, and Gregory Flynn, secretary.

Cartwright Back From Tour

Dale P. Cartwright, who sailed in January, 1925, on a year's tour through Europe and the Orient in the interest of the North East Electric Co. and North East Service, Inc., has just returned to the home office at Rochester, N. Y.

In addition to calling upon dealers handling North East equipped cars, cabs, and motor buses, Mr. Cartwright called on a number of North East foreign service stations in order to build up closer relations with them. In a number of these countries, Mr. Cartwright also established new North East Service Stations.

Fuller Chairman of Board

Henry J. Fuller, president of Rolls-Royce Co. of America, Inc., which recently acquired Brewster & Co., has been elected chairman of the Brewster board, with William Brewster as president; W. E. Hosac, vice-president, Rolls-Royce, as vice-president in charge of sales; H. C. Beaver, vice-president and treasurer, and P. B. Brewster, assistant treasurer and secretary.

Durant Made Manager

H. S. Durant, Chicago, has been appointed manager of the cold-rolled and stripped and spring sales department of the American Steel & Wire Co., succeeding the late Lewis Johnson.

Miranda to Direct Sales Abroad for Duesenberg

The Duesenberg Motors Co. announces the appointment of A. J. Miranda, Jr., as director of the foreign sales division of the company, with offices located at 132 Nassau St., New York City.

Mr. Miranda has had extensive experience in the exportation of high-grade automobiles to foreign markets. The necessity for the establishment of a foreign sales division has been demonstrated in recent months, according to a statement from company officials, by the large number of unsolicited orders and inquiries received from various parts of the world.

Keller Predicts Good 1926

K. T. Keller, general manager of the General Motors of Canada, Ltd., in a year-end review of the automobile situation in Canada predicted a good year for 1926. "The year 1925," he stated, "showed an increase, and 1926 will at least maintain, if not improve, this standing. This means a steady advance in business, and, while it is impossible to say just yet what will be done in 1926, we look for a good year."

Mr. Keller emphasized the fact that in 1924 the province of Ontario owned 44 per cent of all the motor cars in Canada and bought 55 per cent of all the new cars sold in Canada in 1924.

F. W. D. Directors Chosen

Excellent progress was made by the Four Wheel Drive Auto Co. and the Menominee Motor Truck Co., Clintonville, Wis., according to reports of the managements made at the annual meetings of the two companies.

W. A. Olen, Frank Gause and D. J. Rohrer were elected directors of the Four Wheel Drive Co. while W. A. Olen, Frank Gause and Charles Hagen were re-elected to the directorate of the Menominee company, which chose Karl Mathie of Wausau to fill out the remainder of the unexpired term of James Bell, director, resigned.

Goldie and Wilbur Directors

At a meeting of the directors of Motor Truck Industries, Inc., of America last week at the Blackstone Hotel, Chicago, R. J. Goldie, of the Ruggles Motor Truck Co., and G. W. Wilbur, of the United Motor Products Co., were elected to fill two unexpired terms. Mr. Goldie and R. B. Gotfredson were added to the ratings committee.

Bockstege a Director

Fred W. Bockstege, president of the Bockstege Furniture Co., Evansville, Ind., has been elected a director of the Robbins Body Corp., Indianapolis, it was announced last week. The election follows a general reorganization of the Robbins organization, which operates four plants in Indianapolis.

Industry Shows Ability to Avoid Early Danger Points—Business Generally Good

(Continued from page 209)

Used car sales are very slow. Feeling in the trade, however, is optimistic.

MINNEAPOLIS

Automobile and accessory men are as optimistic over 1926 as they were over 1925. Deliveries in January were being made for spring business on orders filed in December, and orders continue to come in for further business. As yet, it has been practically impossible for distributors to get many cars in stock. Farmers now have money, and are no longer depending on one crop, but get revenue from produce, hogs and cattle. The farmer this year has not been forced to sell his grain, which enables him to hold out for the price he desires.

LOUISVILLE

The majority of new car dealers are well satisfied with the January record of new cars sold. Recent price reductions stimulated business to some extent, and, while sales made during the month were less than in December, records for January show an increase of approximately 20 per cent over the same month last year.

The strenuous efforts made in 1925 to take in used cars at their proper resale value is easing this phase of the dealer's problem slightly. Used cars are moving slowly but stocks are reasonably low. Collections still are slightly below normal, but improved.

BIRMINGHAM

January business was very good in Alabama, according to reports of distributors and dealers. Replacement parts and accessories dealers were particularly optimistic.

Tire dealers say that reports that prices are now at the peak have caused business in this section to slow down slightly, but they believe that this was strictly a temporary condition.

The used car market in January was sluggish.

DALLAS

With an optimistic feeling pervading most sections of the state, with the financial situation sound, and plenty of money in the banks and in circulation, the automotive trade in the southwest in January got back into its regular stride, and indications are, according to dealers and jobbers, that business in 1926 will be bigger than in 1925.

New car sales were approximately 3 per cent greater for January, 1926, than in January, 1925. Retailers are not overstocked except on old models.

Used cars moved along usual lines, with competition keen. Prices were slashed in order to move stocks.

Accessory parts and equipment sales were about the same as for January, 1925.

Sales of tires and tubes declined as compared with the same month in 1925. Dealers, however, were not overstocked.

NEW ORLEANS

January business proved better than the first month of the year usually does in some branches of the automotive industry, but not so good in others. Car distributors, however, look forward to the best year in the history of the business.

The market for both new and used cars has been a little below normal, even for January, due to unfavorable weather conditions and to the unsettled price situation.

Accessory sales in January were fair in this territory. In the distribution of replacement parts, business was not only improved over previous January sales, but was even better than in December.

DENVER

Dealers in standard makes of cars report a greatly increased volume of business for January over the corresponding month a year ago, and even over last December. Several wholesalers report increases over the preceding month to be as great as 100 per cent both in new and used cars.

Local dealers and distributors predict maintenance of the pace set for 1926 and look forward to the best year so far in the automotive trade.

SALT LAKE CITY

The automobile business for January showed strength, and was ahead of the same month last year, as well as ahead of December, 1925, in both cars and trucks.

The used car situation is fair. It is estimated that there are at this time about 1000 used machines on the market here. Most firms which have many used cars on hand feel that they are going to move them with comparative ease in the early spring.

LOS ANGELES

January new car sales in Southern California were reported at a satisfactory level, particularly in the low-priced field, with a fair increase over January, 1925.

Used cars present a real sales problem, many distributors declaring that they have the largest stocks on hand in their history. Although the market shows every evidence of absorbing a normal amount of new cars, used car difficulties are great. This is reflected in the retirement of dealers or distributors who last year built up unusually large merchandising organizations here.

SAN FRANCISCO

New car sales in this territory in January were slow, due partly to some prospective buyers waiting for the new showing of cars in March and partly to the fact that others were waiting for the new showing of cars at the automobile show which opened January 30.

Cutting of prices has completely upset the sale of automobiles in California. Some buyers are waiting for further decreases, while others are holding on to their used cars, feeling that the latter should bring better prices. The used car market is practically at a standstill. Many dealers are either refusing to take in used cars on new stock, or are cutting price discount to a minimum.

Erie Foundry Carries Out Expansion Program

ERIE, PA., Feb. 8—The Erie Foundry Co., manufacturer of steam hammers, air hammers, board drop hammers, trimming presses, and other forge shop equipment, are opening several district sales offices, in keeping with their program of expansion, recently announced. The offices already open are as follows:

Plainfield, N. J., in charge of Howard Terhune; Chicago, in charge of L. F. Carlton; Detroit, in charge of R. B. McDonald.

Mr. Terhune has had broad experience and is well known in New York and New England, while Mr. Carlton and Mr. McDonald are both men of practical forge shop experience.

The company is also increasing its manufacturing facilities, through the addition of new buildings and equipment.

Plan Garage Chain to Link Big Cities

Intended to Provide Storage Space in Congested Districts

DETROIT, Feb. 9—Establishment of a Nation-wide chain of garages in the congested districts of large cities is contemplated in the formation of National Garages, Inc., with a capitalization of $500,000, announced here from the offices of Howard E. Coffin, vice-president, Hudson Motor Car Co., and president of the new company. The organization is the development of the idea originated by Detroit Garages, Inc., which will be part of the chain, along with Central Chicago Garages, Inc., and Pittsburgh Parking Garages, Inc. Negotiations are under way for companies or chains in other large cities.

Officers besides Mr. Coffin are Witter J. Peabody, vice-president, Detroit Garages, Inc., first vice-president; William M. MacLachlan, Simon J. Murphy Estate, Detroit, second vice-president; Horace B. Peabody, treasurer, Detroit Garages, Inc., treasurer, and Charles Wright, Jr., secretary. Among the group forming the company are Roy D. Chapin, chairman of the board, Hudson Motor Car Co.; Alvan Macauley, president, Packard Motor Car Co.; Lynn McNaughton, vice-president, Cadillac Motor Car Co.; W. Ledyard Mitchell, vice-president, Chrysler Corp.; Howard Bonbright, Securities Corp.; Frank P. Book, Book-Cadillac Hotel, Detroit.

The system to be followed by the company is based on the need for affording storage space with garage facilities in the downtown sections of large cities. The company does not propose to own outright the various garages and garage companies in the chain, but it seeks to hold stock interest in some instances, in others supplying part of the capital for building, in still others operating under management contracts.

The capital of the holding corporation would thus be used in the main as a revolving fund to assist local interests, though it would also be available for stock holdings that would provide partial ownership.

Coming Feature Issues of Chilton Class Journal Publications

Feb. 18—Automotive Industries—Statistical Number.

March 1—Chilton Tractor & Equipment Journal—Highway Number.

Austin Motors Plans Large Stock Issue

LONDON, Jan. 31 *(by mail)*—Since failure of negotiations for the purchase of the Austin Motor Co., Ltd., by General Motors, arrangements have been completed by Sir Herbert Austin for the issue of £1,500,000 mortgage debenture stock, which will bear interest at the rate of 6½ per cent, the issue price being 97½; the proceeds will be utilized to pay off existing debentures and a government loan, amounting to £1,096,471, leaving a balance of £291,182 for use as additional working capital. It may be recalled that the offer made by General Motors would, if accepted, have provided capital to the amount of £1,500,000 for the same purpose.

The net trading profits (before charging debenture interest and premium of redemption) during the last four financial periods are certified in the prospectus as: 12 months to Dec. 31, 1922, £130-821; 9 months to Sept. 30, 1923, £248,-488; 12 months to Sept. 30, 1924, £265,-396; 12 months to Sept. 30, 1925, £520,677.

Ford Reveals Plans for Airways System

Lines Between Detroit and New York and Boston Proposed

DETROIT, Feb. 8—Henry Ford is mapping out a system of airways connecting Detroit with Boston, New York, Buffalo, New Haven and other eastern cities. Wm. B. Mayo, chief engineer for the Ford Motor Co., told those in attendance at the Conference of the Engineering Profession of Michigan here.

Mr. Ford, according to Mr. Mayo, contemplates starting a line to Buffalo with connecting lines to Boston and New York. Other cities that will be connected are Springfield, Albany and New Haven. The plan contemplates a direct line from Boston to Detroit. It is also planned to open a line from Detroit to Grand Rapids. Mr. Mayo said that the land which the company has recently purchased at Hammond, Ind., was for a landing field. The company has also contracted for construction of hangars on its Cleveland field.

The reason why the Detroit-Buffalo airline was postponed, Mr. Mayo said, was that the Ford Co. was delaying the service until such time as an adequate municipal landing field could be established in Buffalo. According to Mr. Mayo, Mr. Ford originally planned to conduct a freight service between Detroit and Chicago for six months. After this he planned to start carrying passengers, but delayed in the belief that single-motor planes were not satisfactory for this purpose.

Lillard Succeeds Coykendall

NEW YORK, Feb. 8—R. Coykendall has resigned as sales manager of the Gould Storage Battery Co., and is succeeded by O. W. Lillard, who has been with this company for twenty years.

Calendar of Coming Events

SHOWS

Feb. 15-Mar. 15—International Automobile Show, Copenhagen, Denmark.

Feb. 20-28 — 13th Annual International Agricultural Exhibition, Brussels, Belgium.

Apr. 3-14 — International Motor Car Show, Frankfort-on-Main, Germany.

CONVENTIONS

Feb. 24—Motor Truck Industries, Inc., of America, Detroit.

Apr. — American Gear Manufacturers Association, Detroit.

June 14-19 — Automotive Equipment Association, Mount Royal Hotel, Montreal, Canada.

RACES

Feb. 22 — 300-mile race, Fulford, Fla.

May 1 — Races at opening of new Speedway, Atlantic City.

May 30-31 — 500-mile race, Indianapolis.

June 12-13 — Rudge-Whitworth 24-hour stock car race, Le Mans, France.

S. A. E. MEETINGS

National

June 1-4—Semi-annual meeting, French Lick Springs, Ind.

Mar. 25-26—Annual tractor meeting, in cooperation with American Society of Agricultural Engineers, Chicago.

Sectional

Feb. 15—Cleveland Section: Hollenden Hotel, Cleveland, 7.30 P. M.; dinner 6.30 P. M. Subject, Automobiles of Today and Tomorrow, by Herbert Chase.

Feb. 16—New England Section: Providence Engineering Society, Providence, R. I. Production meeting.

Feb. 18—Metropolitan Section: Building Trades Club, New York City, 8 P. M.; dinner 6.30 P. M. Subject, Outlook for Bus Transportation in New York City, by F. Van Z. Lane; Motor Bus Operation in Cities, by D. J. Locke; High-Speed Intercity Bus Operation, by Alexander Shapiro, and Bus Design and Construction, by L. P. Kalb.

Feb. 19.—Chicago Section: Western Society of Engineers, Monadnock Block, Chicago, 8 P. M., preceded by supper. Subject, Soothing the Internal Combustion Engine, by Prof. Daniel Roesch.

Feb. 23—Buffalo Section: Statler Hotel, Buffalo, 8 P. M. Subject, Progress in Airplane Engine Design, by Arthur Nutt.

Feb. 25 — Detroit Section: General Motors Building, Detroit, 8 P. M.; dinner 6.30 P. M. Subject, Airplane Engine Maintenance, by Lieut. Cyrus Bettis.